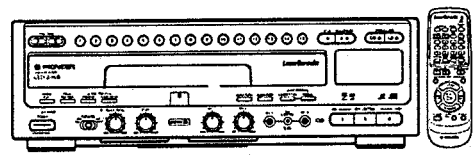
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
RRV1640

CD CDV LD PLAYER
CLD-V870

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model	Power Requirement	Remarks
	CLD-V870		
KU	○	AC120V	
KC	○	AC120V	

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

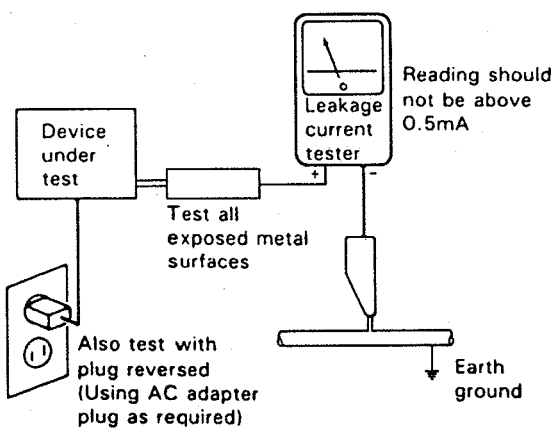
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. PACKING, EXPLODED VIEWS AND PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

2.1 PACKING

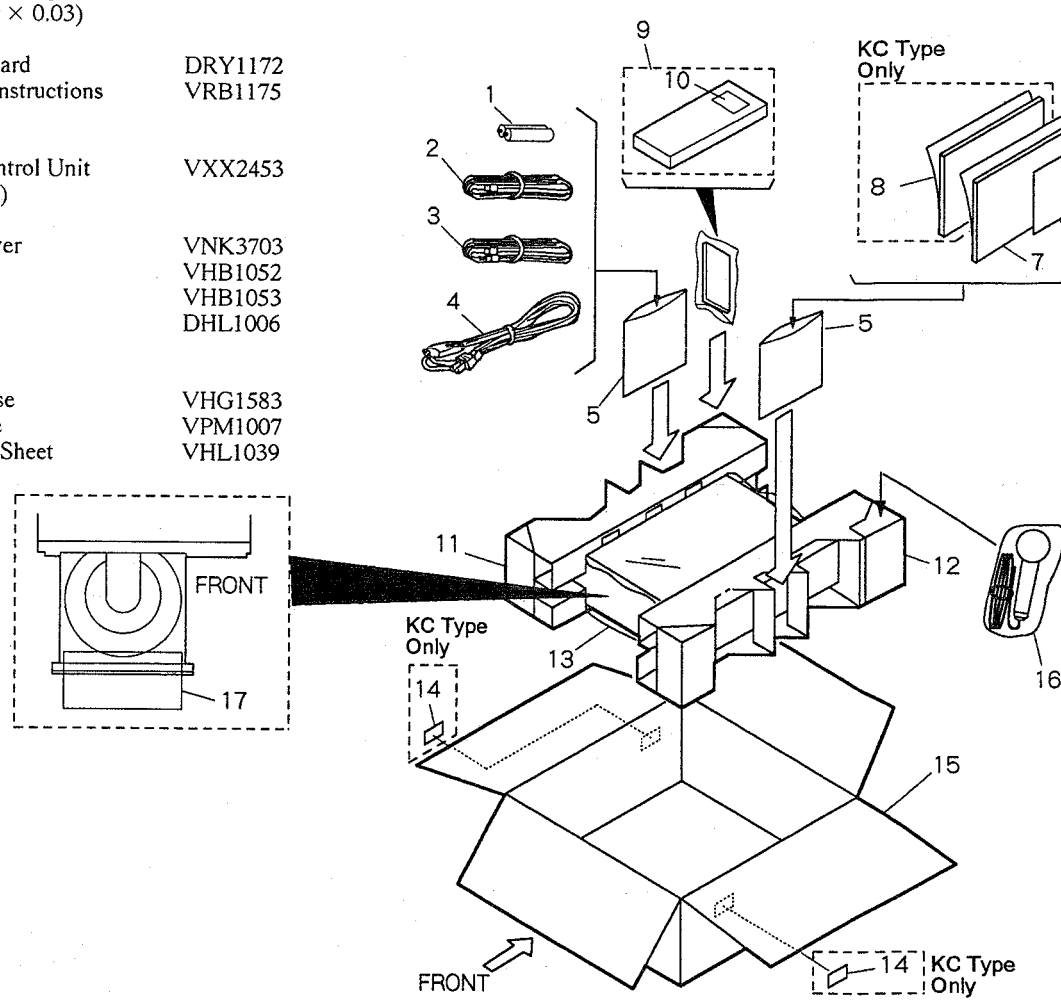
(1) CONTRAST OF CLD-V870/KU AND KC.

CLD-V870/KU and KC have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.		Remarks
			CLD-V870/KU	CLD-V870/KC	
NSP	6	Warranty Card	DRY1172	ARY1039	
	8	Operating Instructions (French)	Not used	VRC1049	
	14	KC Label	Not used	VRW1402	

(2) PARTS LIST FOR CLD-V870/KU

Mark	No.	Description	Part No.
NSP	1	Dry Cell Battery (R6P, AA)	VEM-013
	2	Video Cord	VDE1048
	3	Audio Cord	VDE1047
⚠	4	AC Power Cord	ADG1126
	5	Polyethylene Bag (230 × 340 × 0.03)	Z21-038
NSP	6	Warranty Card	DRY1172
	7	Operating Instructions (English)	VRB1175
	8	• • • • •	
	9	Remote Control Unit (CU-V152)	VXX2453
	10	Battery Cover	VNK3703
	11	Protector L	VHB1052
	12	Protector R	VHB1053
	13	Mirror Mat	DHL1006
	14	• • • • •	
	15	Packing Case	VHG1583
	16	Microphone	VPM1007
	17	Mirror Mat Sheet	VHL1039



2.2 EXTERIOR AND DISC TRAY SECTION

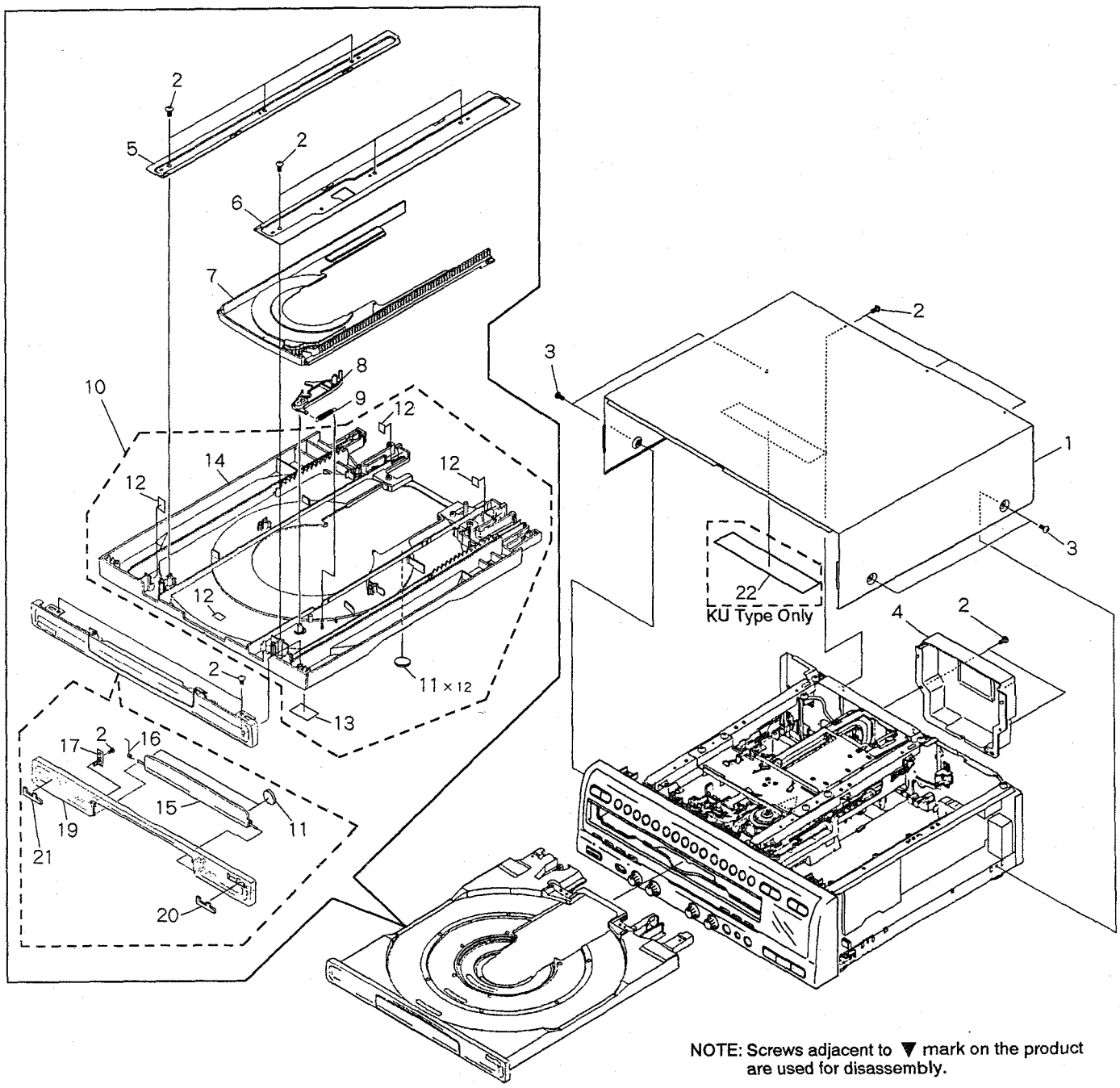
(1) CONTRAST OF CLD-V870/KU AND KC.

CLD-V870/KU and KC have the same construction except for the following:

Mark	No.	Symbol & Description	Part No.		Remarks
			CLD-V870/KU	CLD-V870/KC	
	1	Bonnet S	VXX2355	VXX2252	
	22	65 Label	ORW1069	Not used	

(2) PARTS LIST FOR CLD-V870/KU

Mark	No.	Description	Part No.
	1	Bonnet S	VXX2355
	2	Screw	BBZ30P080FMC
	3	Screw	BCZ40P060FZK
	4	Rear Cover	VNK3786
	5	Guide Plate (R)	VNE1939
	6	Guide Plate (L)	VNE1938
	7	CD Tray	VNK3007
	8	Lock Plate	VNL1703
	9	Lock Plate Spring	VBH1188
	10	Tray Assy-S	VXX2307
	11	Cushion	VEC1682
	12	Damp Cushion	VEC1683
NSP	13	Label	VRW1289
	14	LD Tray Assy	VXA2173
	15	CD Door Assy	VXA2299
	16	Door Spring	VBH1248
	17	Door Holder	VNL1704
	18	• • • • •	
	19	Tray Panel	VNK3788
	20	Karaoke Plate	VAM1055
	21	Name Plate	PAM1704
	22	65 Label	ORW1069

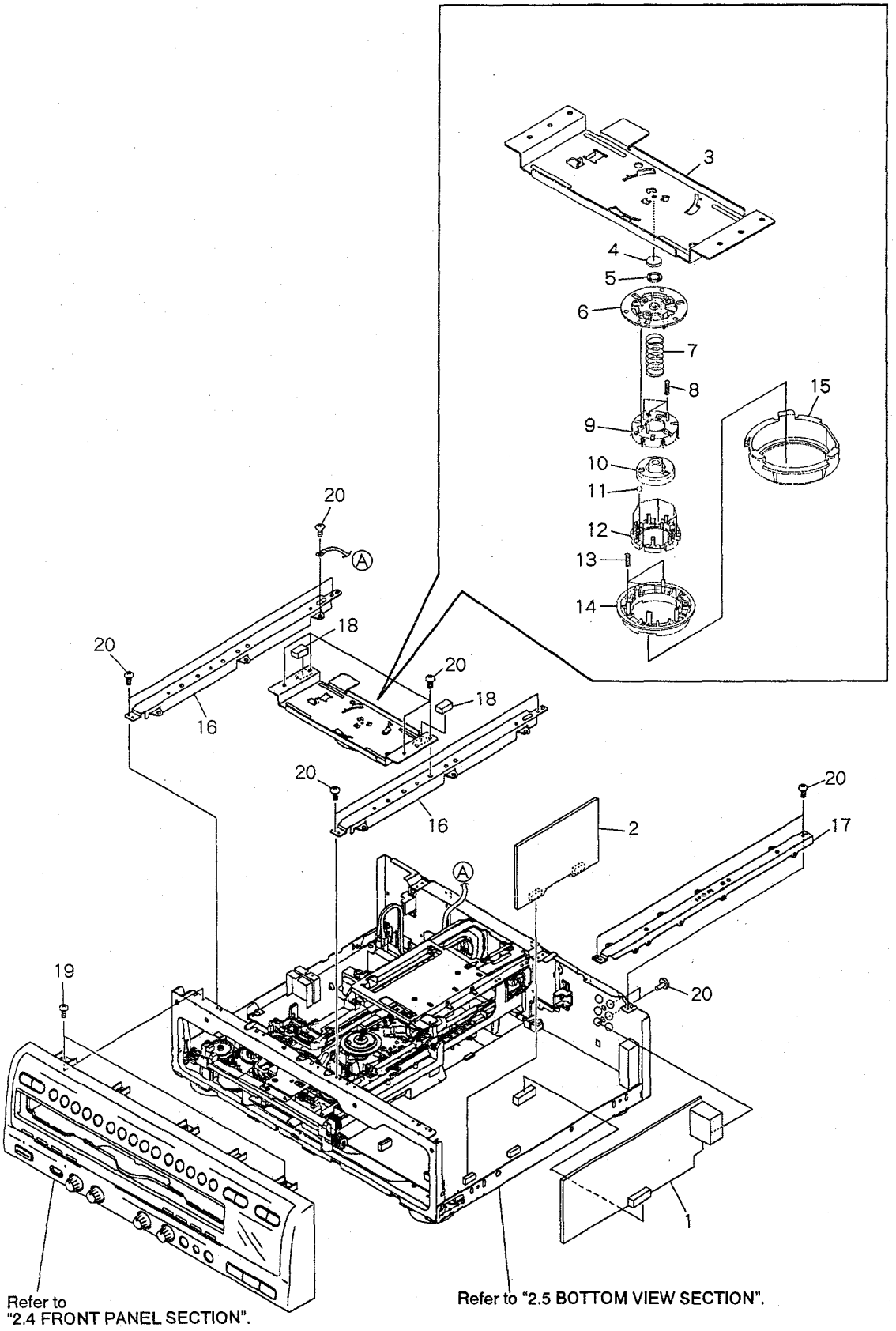


NOTE: Screws adjacent to ▼ mark on the product are used for disassembly.

2.3 TOP VIEW SECTION

Parts List

Mark	No.	Description	Part No.
	1	KRAB Assy	VWV1491
	2	GRPB Assy	VWV1501
	3	Center Plate	VNE1971
	4	Rubber Mat	VEB1114
	5	Thrust Holder	VNL1663
	6	Clamper Head	VNL1603
	7	LD Spring	VBH1240
	8	Cover Spring	VBH1234
	9	Ball Cover	VNL1602
	10	LD Hab	VNT1047
	11	Steel Ball	VNX1013
	12	Ball Guide	VNL1616
	13	Clamp Spring	VBH1239
	14	Clamper	VNL1604
	15	Clamper Holder	VNL1680
	16	Center Angle	VNE1965
NSP	17	PCB Holder	VNE1964
NSP	18	Damp Cushion	VEC1602
	19	Screw	IBZ30P080FMC
	20	Screw	BBZ30P080FMC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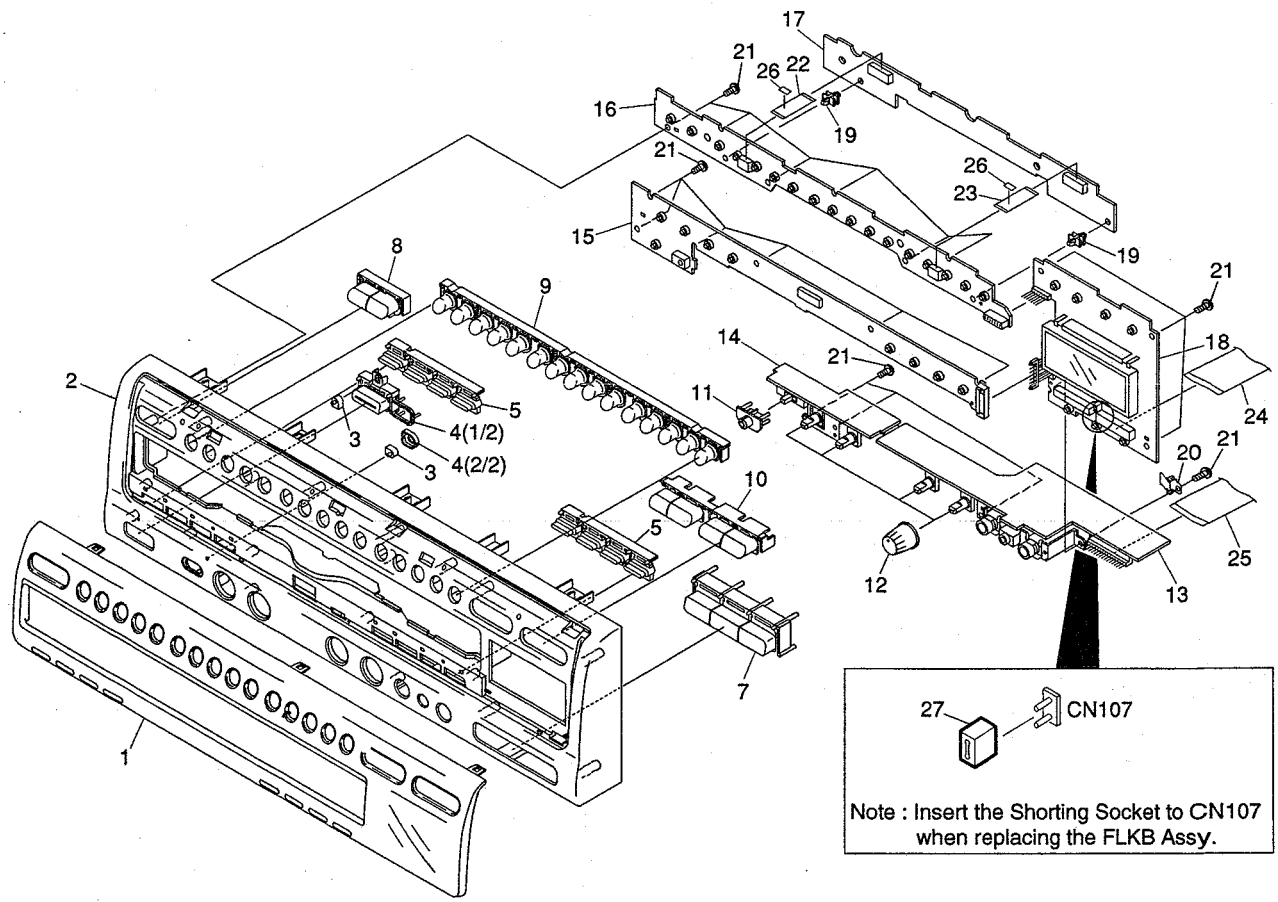
Refer to
"2.4 FRONT PANEL SECTION".
Refer to "2.5 BOTTOM VIEW SECTION".

2.4 FRONT PANEL SECTION

Parts List

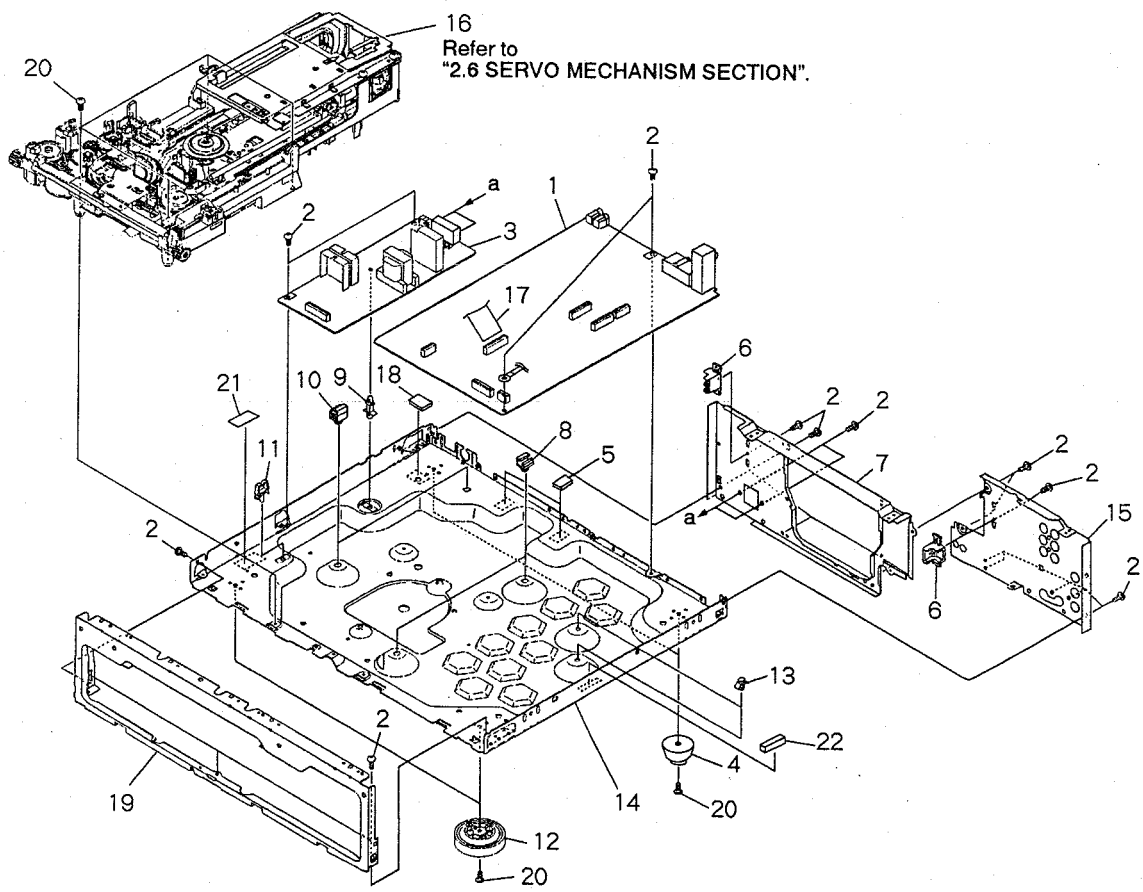
Mark	No.	Description	Part No.
	1	Center Panel	VNK3790
	2	Front Panel	VNK3770
	3	LED Lens	PNW2019
	4	PW Button	VNK3179
	5	L Key A	VNK3688
	6	• • • • •	
	7	Key Con. Button	VNK3674
	8	A/B Button	VNK3678
	9	15 Key	VNK3673
	10	Play Button	VNK3676
	11	Slide Knob	VNK3187
	12	VR Knob	VNK3677
NSP	13	JACB Assy	VWV1492
NSP	14	VRSB Assy	VWG1761
	15	KALB Assy	VWG1762
NSP	16	DIKB Assy	VWG1763
NSP	17	IOEB Assy	VWG1764
	18	FLKB Assy	VWG1760
NSP	19	PC Support (B)	VEC1244
	20	Earth Plate	VNE2027
	21	Screw	BBZ30P080FMC
	22	Flexible Cable (10P) (DIKB CN303 – IOEB CN702)	VDA1557
	23	Flexible Cable (10P) (DIKB CN302 – IOEB CN701)	VDA1557
	24	Flexible Cable (22P) (FLKB CN102 – MOTHER CN107)	VDA1551
	25	Flexible Cable (19P) (JACB CN501 – KRAB CN102)	VDA1552
	26	Spacer	VEC1894
	27	Shorting Socket	DKX1039



2.5 BOTTOM VIEW SECTION

Parts List

Mark	No.	Description	Part No.
	1	MOTHER Assy	VWS1249
	2	Screw	BBZ30P080FMC
⚠	3	POWER SUPPLY Assy	VWR1269
	4	Insulator Assy	VXA2295
NSP	5	Rubber Spacer	VEB1252
	6	Tray Stopper	VNL1657
	7	Rear Panel (R)	VNA1734
NSP	8	P Plate Holder	PNY-405
NSP	9	PC Support	VEC-269
NSP	10	PCB Hinge	VEC1174
NSP	11	Wire Clip (H)	VEC1181
	12	Insulator	PNW1912
	13	Card Spacer A	VEC1708
NSP	14	Chassis	VNA1564
	15	Rear Panel (L)	VNA1741
NSP	16	Mechanism Assy	VWT1131
	17	Flexible Cable (21P) (MOTHER CN102-POWER SUPPLY CN202)	VDA1465
	18	Spacer	PEB1275
NSP	19	Panel Holder	VNA1507
	20	Screw	BBZ30P100FMC
	21	F. ICP Caution Label	VRW1590
	22	Spacer	REB1171

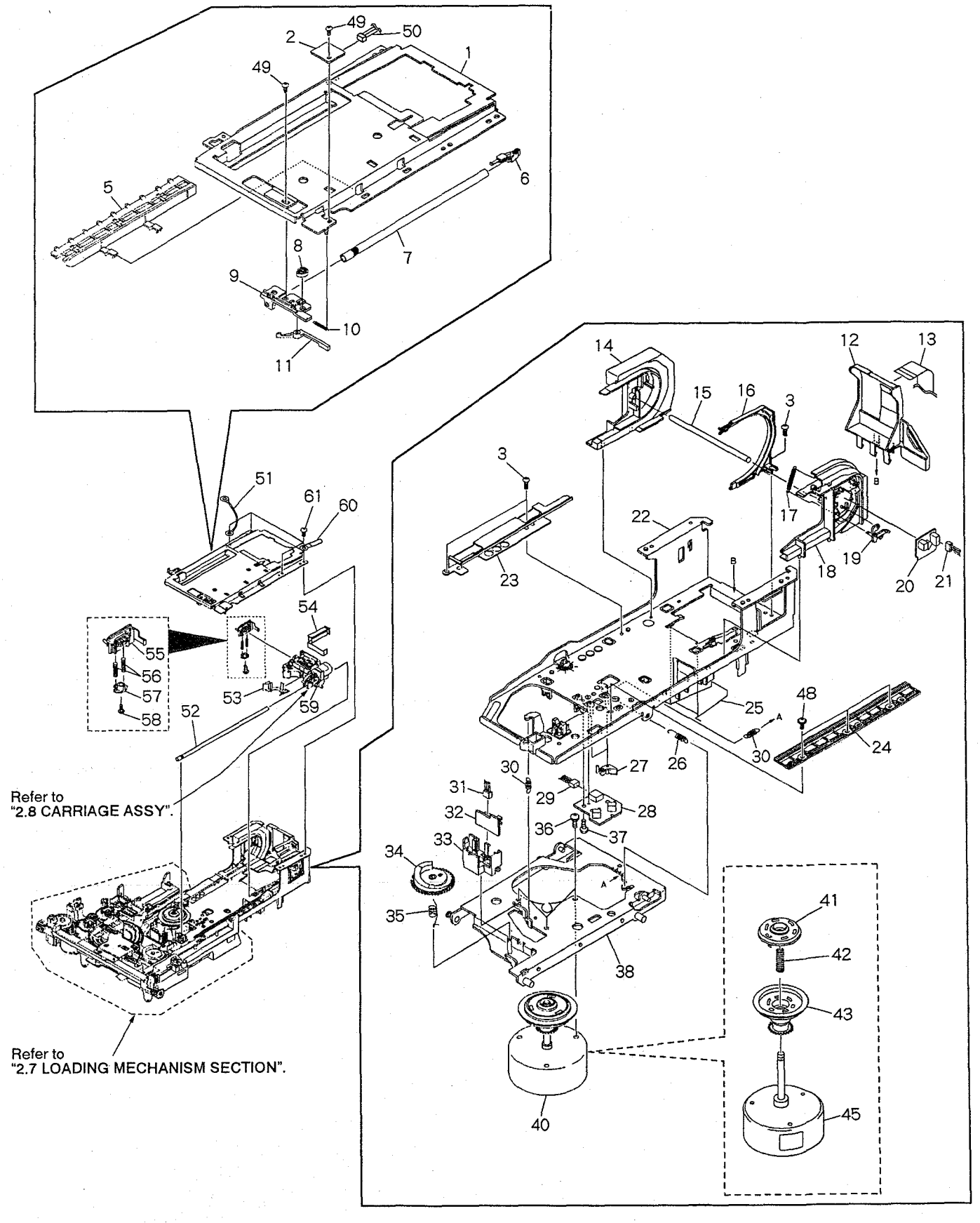


2.6 SERVO MECHANISM SECTION

Parts List

Mark	No.	Description	Part No.
	1	Tilt Base (upper)	VNE1969
NSP	2	BISB Assy	VWG1558
	3	Screw	BBZ30P060FMC
	4	• • • • •	
	5	Rack (Upper)	VNL1679
	6	Shaft Stay	VNL1671
	7	Carriage Shaft (upper)	VLL1478
	8	B Cam	VNL1673
	9	Shaft Support	VNL1672
	10	Support Spring	VBH1265
	11	SW Lever (B)	VNL1678
	12	Large hill	VNL1682
	13	Flexible Cable (23P)	VDA1528
	14	Turn Guide	VNL1701
	15	FFC Style Shaft	VLL1474
	16	Guide	VNL1674
	17	Lever Spring	VBH1266
	18	Turn Gear	VNL1702
	19	SW Lever (T)	VNL1695
NSP	20	TNSB Assy	VWG1557
	21	Housing Assy (3P, Black)	VKP2059
	22	Tilt Base (Under)	VNL1670
	23	TAN Guide	VNE1973
	24	CA Rack	VNL1647
	25	FFC Style Spring	VBH1270
	26	Thrust Spring	VBH1245
	27	CA-SW Lever	VNL1644
NSP	28	PKSB Assy	VWG1555
	29	Housing Assy (3P, Blue)	VKP2045
	30	Tilt Spring	VBH1263

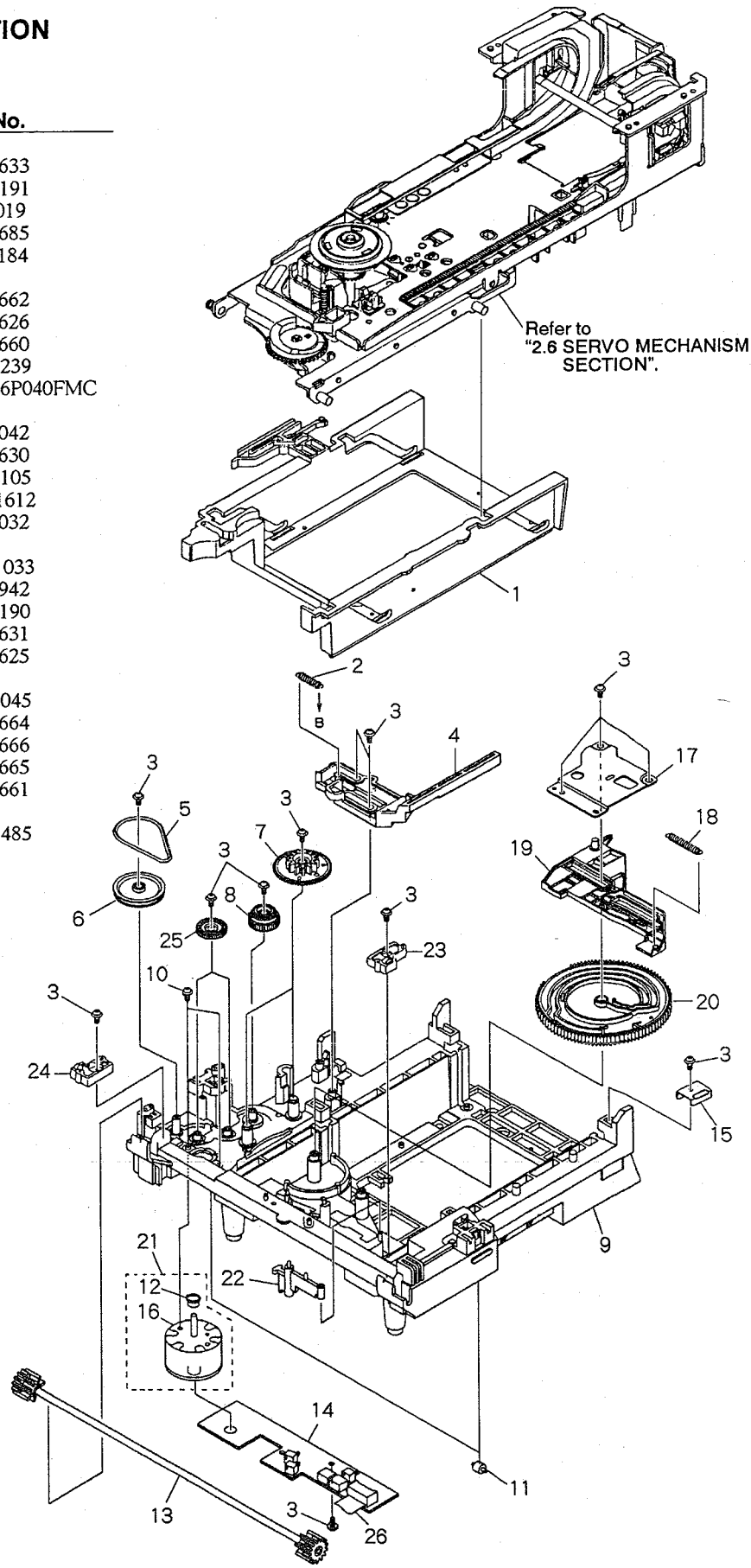
Mark	No.	Description	Part No.
	31	Housing Assy (3P, Yellow)	VKP2046
NSP	32	FG Assy	VWG1556
	33	FG Base	VNL1645
	34	Tilt Cam	VNL1643
	35	Tilt Cam Spring	VBH1243
	36	Screw	PMA30P050FMC
	37	Screw	IBZ26P120FMC
	38	Motor Base	VNE1941
	39	• • • • •	
	40	Spindle Motor Assy	VXA2271
	41	PRC Hub	VNL1684
	42	Centering Spring	VBH1269
NSP	43	R Turn Table Assy	VXA2225
	44	• • • • •	
NSP	45	Spindle Motor	VXM1057
	46	• • • • •	
	47	• • • • •	
	48	Screw	IBZ26P060FMC
	49	Screw	BPZ20P040FZK
	50	Housing Assy (2P, Red)	VKP2060
NSP	51	Earth Lead Unit	DE007VF0
	52	Carriage Shaft (Under)	VLL1493
	53	Body Guard	VNL1681
	54	FFC Holder	VNL1706
	55	CA Guide	VNL1668
	56	TAN Spring (B)	VBH1264
	57	TAN Lever (B)	VNL1669
	58	Screw	PMZ20P060FZK
	59	Carriage Assy	VWT1110
NSP	60	Cord Binder	ZCB-069Z
	61	Screw	BBZ30P080FMC


Refer to
"2.8 CARRIAGE ASSY".
Refer to
"2.7 LOADING MECHANISM SECTION".

2.7 LOADING MECHANISM SECTION

Parts List

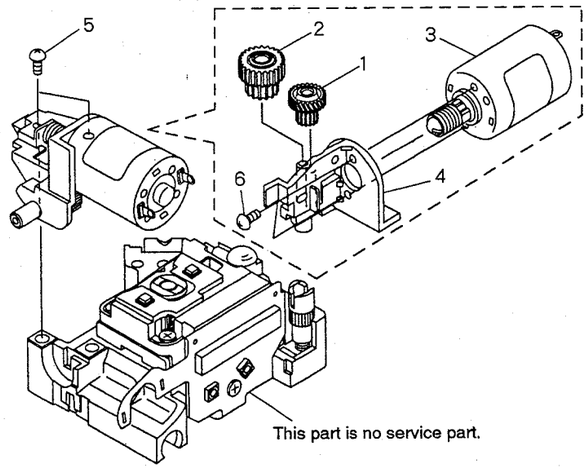
Mark	No.	Description	Part No.
	1	Clamp Cam	VNL1633
	2	CDP Spring	VBH1191
	3	Screw	Z39-019
	4	CD Plate	VNL1685
	5	Rubber Belt	VEB1184
	6	Gear Pulley	VNL1662
	7	Twin Gear	VNL1626
	8	Center Gear	VNL1660
	9	Mechanism Base	VNK3239
	10	Screw	BMZ26P040FMC
	11	Roller	VNL1042
NSP	12	Motor Pulley	VNL1630
	13	Synchro Gear Assy	VXA2105
NSP	14	LMSB Assy	VWG1612
	15	Cam Holder	VNE2032
NSP	16	Carriage Motor	VXM1033
	17	Shaft Holder	VNE1942
	18	CAS Spring	VBH1190
	19	Cam Plate	VNL1631
	20	Cam Gear	VNL1625
	21	Loading Motor Assy	VXX2045
	22	MB-SW Lever	VNL1664
	23	Slider (R)	VNL1666
	24	Slider (L)	VNL1665
	25	Double Gear	VNL1661
	26	Flexible Cable (12P)	VDA1485



2.8 CARRIAGE ASSY

Parts List

Mark	No.	Description	Part No.
	1	CA Gear (A)	VNL1638
	2	CA Gear (B)	VNL1639
	3	Slider Motor Assy	VXX2082
	4	M Holder	VNL1700
	5	Screw	PBZ20P060FMC
	6	Screw	PMZ20P030FMC



3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

NOTE FOR SCHEMATIC DIAGRAM (Type 4A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**

2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**

3. **RESISTORS:**
Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance:(F):±1%, (G):±2%, (K):±10%, (M):±20% or ±5% unless otherwise noted.

4. **CAPACITORS:**
Unit : p:pF or μF unless otherwise noted.
Ratings : capacitor (μF) /voltage (V) unless otherwise noted.
Rated voltage : 50V except for electrolytic capacitors.

5. **COILS:**
Unit : m:mH or μH unless otherwise noted.

6. **VOLTAGE AND CURRENT:**
▭ or ←V :
DC voltage (V) in PLAY mode unless otherwise noted.
⇦mA or ←mA :
DC current in PLAY mode unless otherwise noted.
Value in ( ) is DC current in STOP mode.

7. **OTHERS:**
- ● ⊘ or ⊘ : Adjusting point.
- ● ⋖ : Measurement point.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.

8. **SCH – □ ON THE SCHEMATIC DIAGRAM:**
- SCH– □ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

9. **SWITCHES** (Underline indicates switch position):

LMSB ASSY
S101 : SW1
S102 : SW2
S103 : SW3

PKSB ASSY
S104 : INNER
S105 : OUTER

FLKB ASSY
S101 : STOP(■)
S102 : PLAY/PAUSE(▶/ ❚❚)
S103 : OPEN/CLOSE(CD ⏏)
S104 : OPEN/CLOSE(LD ⏏)
S105 : ♭
S106 : ♯
S107 : ♮

VRSB ASSY
S601 : NORMAL/KARAOKE/AUX INPUT

KALB ASSY
S201 : POWER STANDBY/ON
S202 : SINGLE PLAY
S203 : VOCAL PARTNER
S204 : ONE-TOUCH KARAOKE
S205 : ONE-TOUCH GUIDE VOCAL
S206 : QUICK TURN
S207 : GRAPHICS
S208 : COMPETITION ┐SCORING
S209 : NORMAL ┘

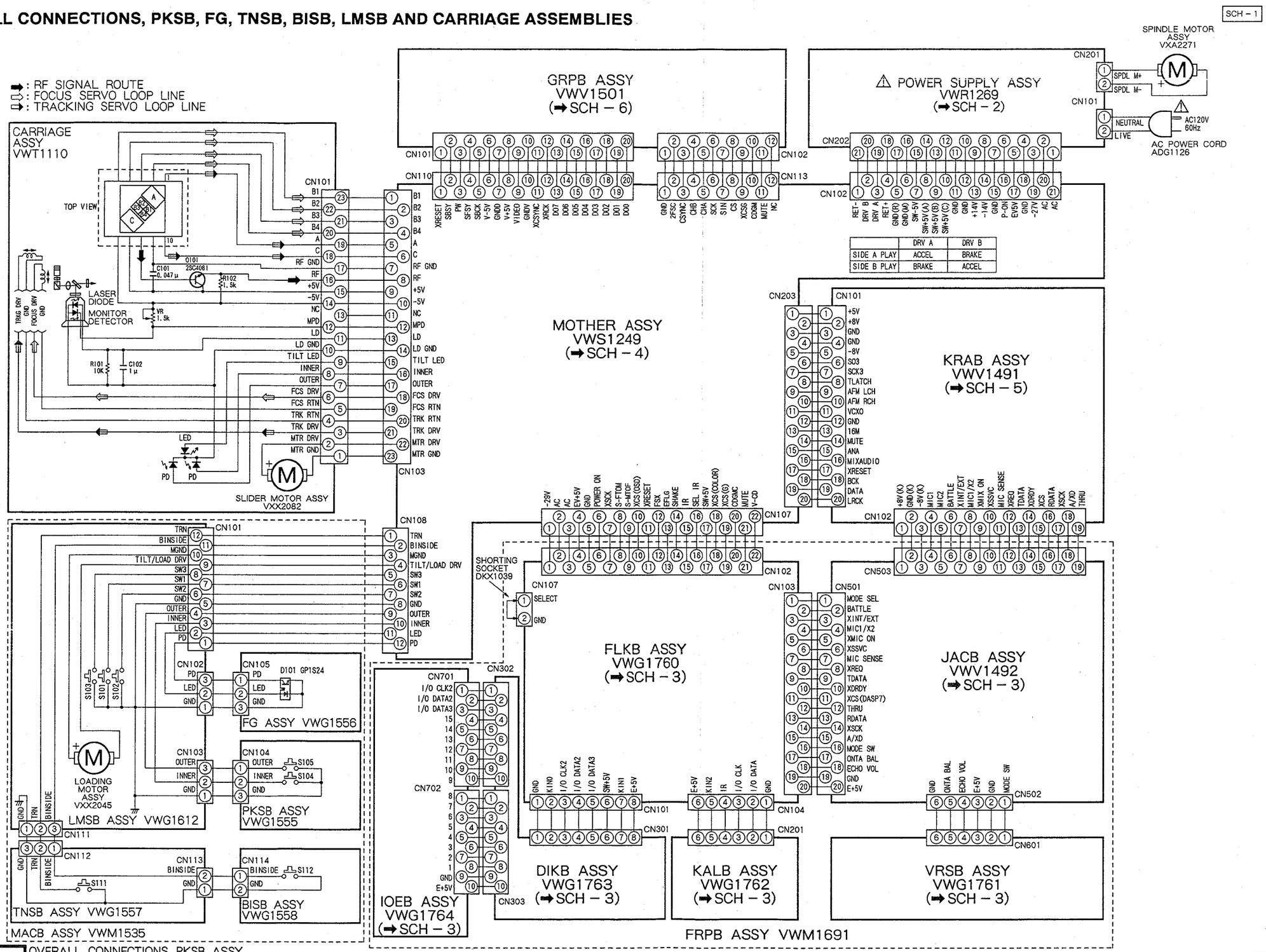
BISB ASSY
S112 : B INSIDE

TNSB ASSY
S111 : TURN

DIKB ASSY
S301 : A ┐DISC SIDE
S302 : B ┘
S303 : 1
S304 : 2
S305 : 3
S306 : 4
S307 : 5
S308 : 6
S309 : 7
S310 : 8
S311 : 9
S312 : 10
S313 : 11
S314 : 12
S315 : 13
S316 : 14
S317 : 15

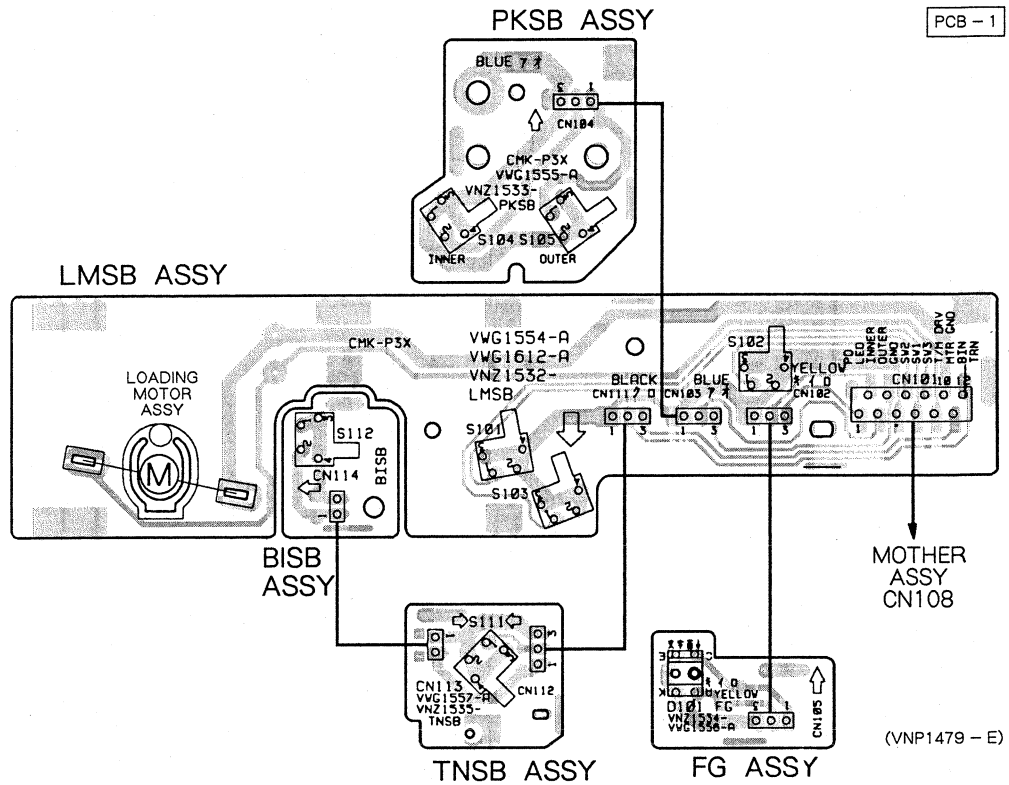
KRAB ASSY
S301 : ATTENUATOR

3.1 OVERALL CONNECTIONS, PKSB, FG, TNSB, BISB, LMSB AND CARRIAGE ASSEMBLIES



SCH-1 OVERALL CONNECTIONS, PKSB ASSY, FG ASSY, TNSB ASSY, BISB ASSY, LMSB ASSY, CARRIAGE ASSY

OVERALL CONNECTIONS, PKSB ASSY, FG ASSY, TNSB ASSY, BISB ASSY, LMSB ASSY, CARRIAGE ASSY **SCH-1**



● This diagram is viewed from the mounted parts side.

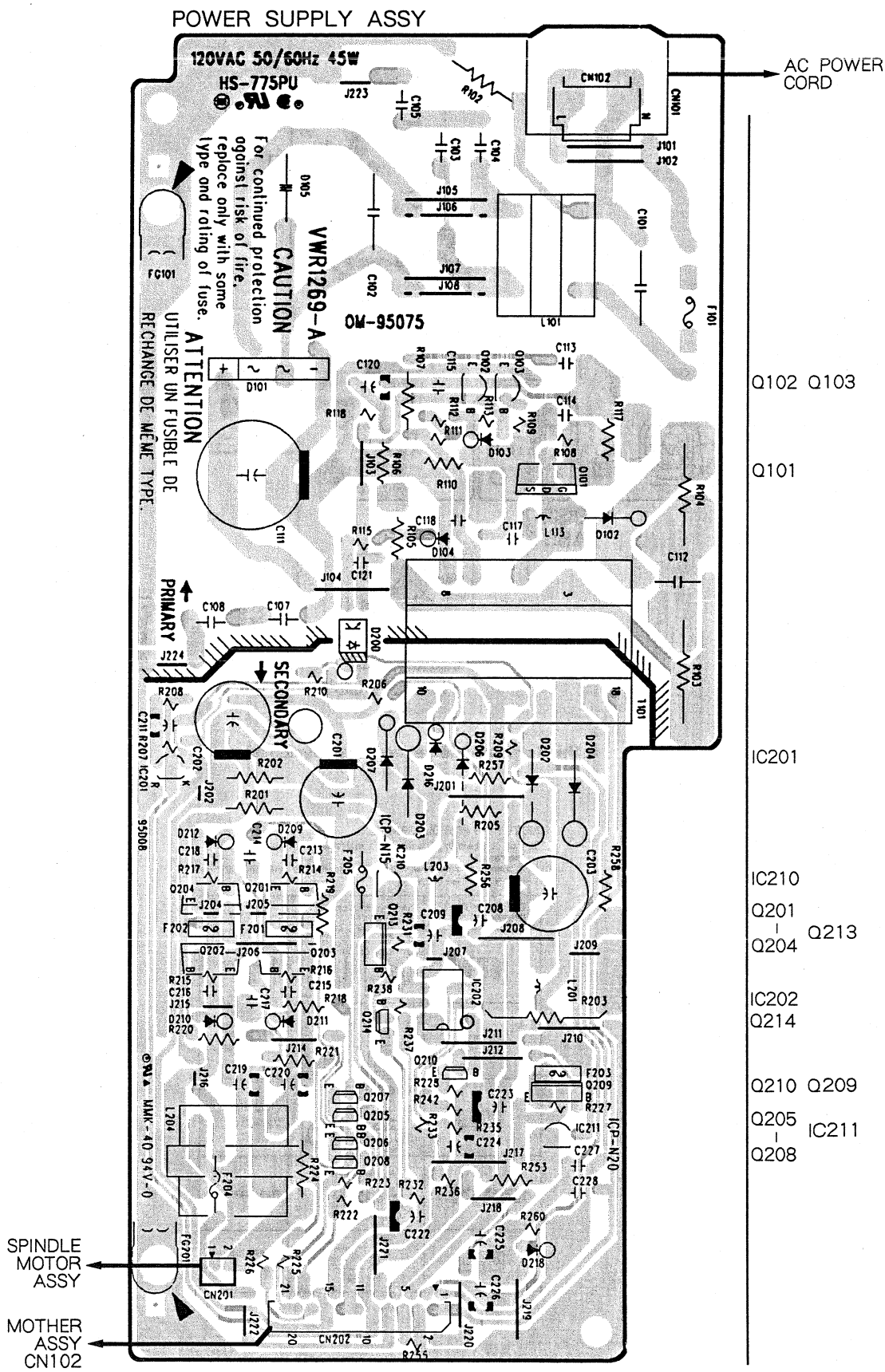
NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3.2 POWER SUPPLY ASSY

PCB – 2



● This diagram is viewed from the mounted parts side.

⚠POWER SUPPLY ASSY (VWR1269)

SCH-2

《Caution on repair the primary side parts of the POWER SUPPLY Assy》

- During repair, those other than the specified parts cannot be used to prevent the occurrence of an accident.
- Mark ✓ must be written in red on the board when the primary part of the power block is repaired.
- During part replacement, maintain the air clearance so that the replaced parts do not touch other parts.

● NOTE FOR FUSE REPLACEMENT

CAUTION — FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.

MOTHER ASSY CN102 (➡SCH – 4)

CN201 SPINDLE MOTOR ASSY (➡SCH – 1)

	DRV A	DRV B
SIDE A PLAY	ACCEL	BRAKE
SIDE B PLAY	BRAKE	ACCEL

CN202: 21 RET– / 20 DRV B / 19 DRV A / 18 RET+ / 17 GND (R) / 16 GND (M) / 15 SW–5V / 14 SW+5V (A) / 13 SW+5V (B) / 12 SW+5V (C) / 11 GND / 10 GND / 9 +14V / 8 –14V / 7 GND / 6 P–ON / 5 EV5V / 4 GND / 3 –27V / 2 AC 4V / 1 AC 4V

CN101: 2 LIVE / 1 NEUTRAL → AC POWER CORD (➡SCH – 1)

F101 2.0A 125V REK1078

D101 D2SBA60F4004

D105 K1V24

L101

C101 C102 C103 C104 C105 C111

R102

T101 POWER TRANSFORMER

FG101

F201 VEK1034 136°C

F202 VEK1034

F204

F205 125V 1.0A VEK1036 136°C

D202 S3LA20

D203 S3LA20

D204 S3S4M

D207 RD33FB2

R201 680 1W

R202 680 1W

C201 2200/25

C202 2200/25

R219 180 1/2W

R218 180 1/2W

R221 180 1/2W

R224 1W 0.33

L204 640μH

R225 1/4W 1K

R226 1/4W 1K Ⓔ

C219 2.2/50

C220 2.2/50

C213 0.022/50

C214 0.01/50

C215 0.022/50

C216 0.022/50

C217 0.01/50

C218 0.022/50

R214 47 1/6W

R215 47 1/6W

R216 47 1/6W

R217 47 1/6W

Q202 T7F4T

Q201 T7F4T

Q204 T7F4S

Q203 T7F4S

D210 AG01Z-VO

D209 AG01Z-VO

D212 AG01Z-VO

D211 AG01Z-VO

IC211 ICP-N20 0.8A

L201 39μH 1.3A

F203 VEK1033 136°C

Q209 VZF1040

Q210 2SC1740S

R227 10K 1/4W

R203 47 3W

C203 1800/10

R233 4.7K 1/4W Ⓔ

R242 4.7K 1/4W Ⓔ

R253 1/2W 150

C225 100/25

C223 470/10

IC202 UPC358C

R205 220 1/2W

R228 82 1/4W

R232 82 1/4W

C208 470/10

L203 39μH 1.3A

R256 0.22 1/4W

D206 VZF1039

D216 AG01Z-VO

R257 68 1/4W

R255 330 1/4W

R236 10K 1/4W Ⓔ

R237 4.7K 1/4W Ⓔ

R235 10K 1/4W Ⓔ

R238 4.7K 1/4W Ⓔ

C224 10/16

C209 120/16

C222 470/10

Q214 2SA933S

Q213 2SD2007

R231 10K 1/4W

IC210 ICP-N15 0.6A

R260 1/4W 10K

D218 MTZJ8.2B

C226 100/35

C228 0.022/50

C227 0.022/50

R258 8.2 1/4W

R209 120 1/4W

R206 1.5K 1/4W Ⓔ

R207 180 1/4W

R208 1.5K 1/4W Ⓔ

R210 1.8K 1/4W

C211 0.22/50

D200 PS2501L1-1M

IC201 HA17431P

C121

R105 R106 R103 R104

C112

D102 EG01C

Q101 VZF1037

L113 C117

R107 C113 C120 R117 R108 C114

R111 R112 D104 1SS270A

R115 D103 MTZJ2.7B

Q102 2SC3377

C115

R118 R110 R109

Q103 2SC3377

C107 C108

C118

A194

FG201

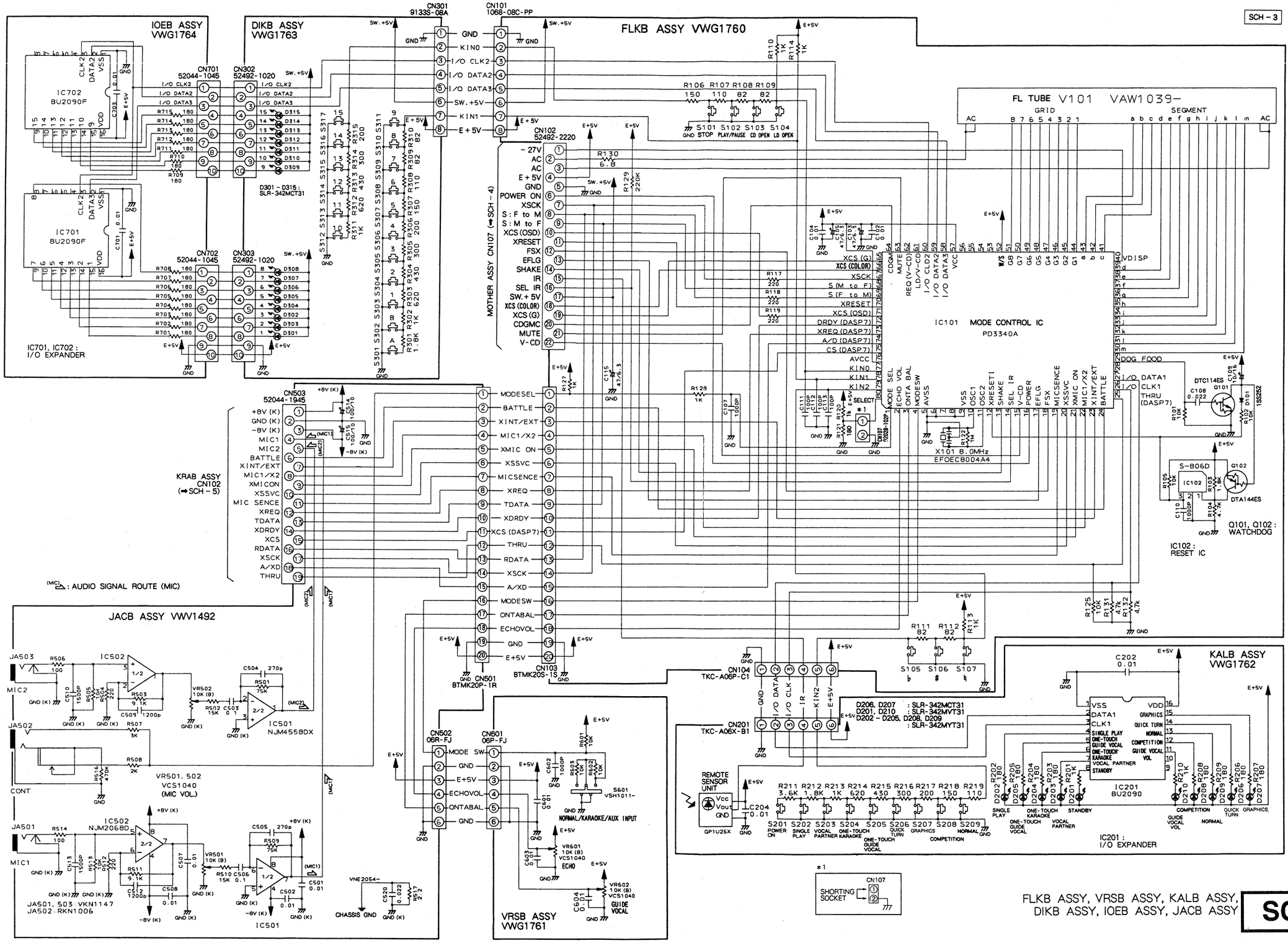
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N20, MFD BY ROHM CO., LTD. FOR IC211.

CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC210.

SCH-2 POWER SUPPLY ASSY

POWER SUPPLY ASSY SCH-2

3.3 FLKB, VRSB, KALB, DIKB, IOEB AND JACB ASSEMBLIES



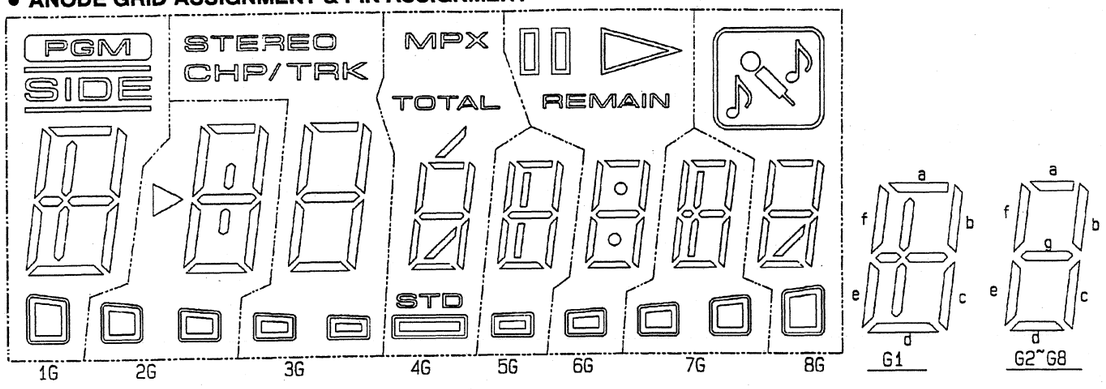
FLKB ASSY, VRSB ASSY, KALB ASSY, DIKB ASSY, IOEB ASSY, JACB ASSY

SCH-3

■ VAW1039 (FLKB ASSY : V101)

• **FL TUBE**

• ANODE GRID ASSIGNMENT & PIN ASSIGNMENT



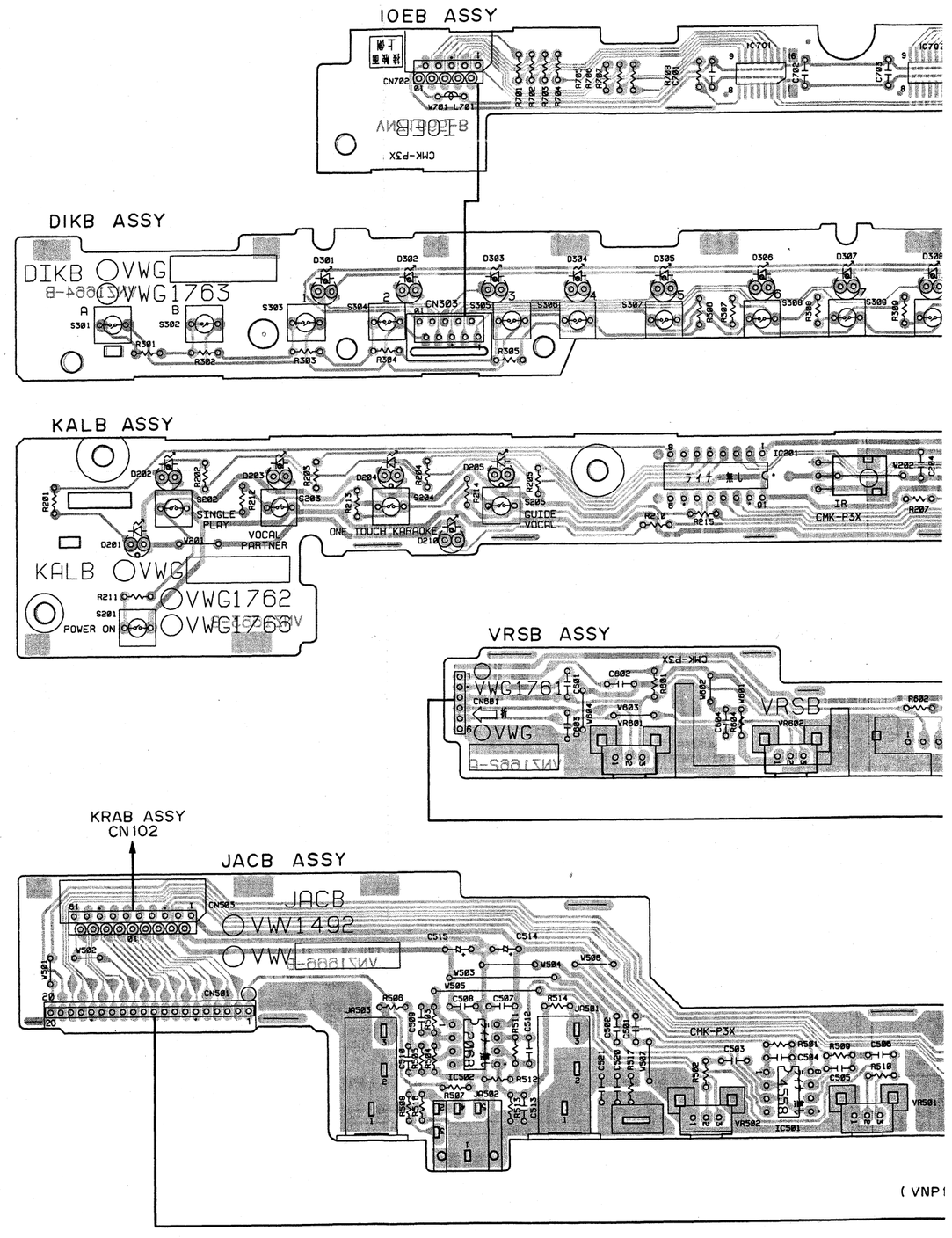
• ANODE GRID ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8
S1	a	a	a	a	a	a	a	a
S2	b	b	b	b	b	b	b	b
S3	c	c	c	c	c	c	c	c
S4	d	d	d	d	d	d	d	d
S5	e	e	e	e	e	e	e	e
S6	f	f	f	f	f	f	f	f
S7	-	g	g	g	g	g	°	g
S8	-	!	STEREO	(UP) ⁄	!	:	-	⁄
S9	!	▷	CHP/TRK	(DW.) ⁄		▯▯	!	
S10	PGM	(R) ▭	(R) ▭	MPX		▷	(R) ▭	
S11	SIDE	(L) ▭	(L) ▭	TOTAL		REMAIN	(L) ▭	
S12	▭	(R) ▭	(R) ▭	STD	▭	▭	(R) ▭	▭
S13	▭	(L) ▭	(L) ▭	▭	▭	▭	(L) ▭	▭

• PIN ASSIGNMENT

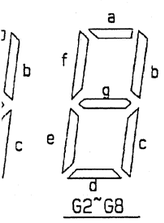
Pin No.	1	2	3	4	5	6	7	8	9	10
Assignment	F	F	NP	S13	S12	S11	S10	S9	S8	S7
Pin No.	11	12	13	14	15	16	17	18	19	20
Assignment	S6	S5	S4	S3	S2	S1	G1	G2	G3	G4
Pin No.	21	22	23	24	25	26	27			
Assignment	G5	G6	G7	G8	NP	F	F			

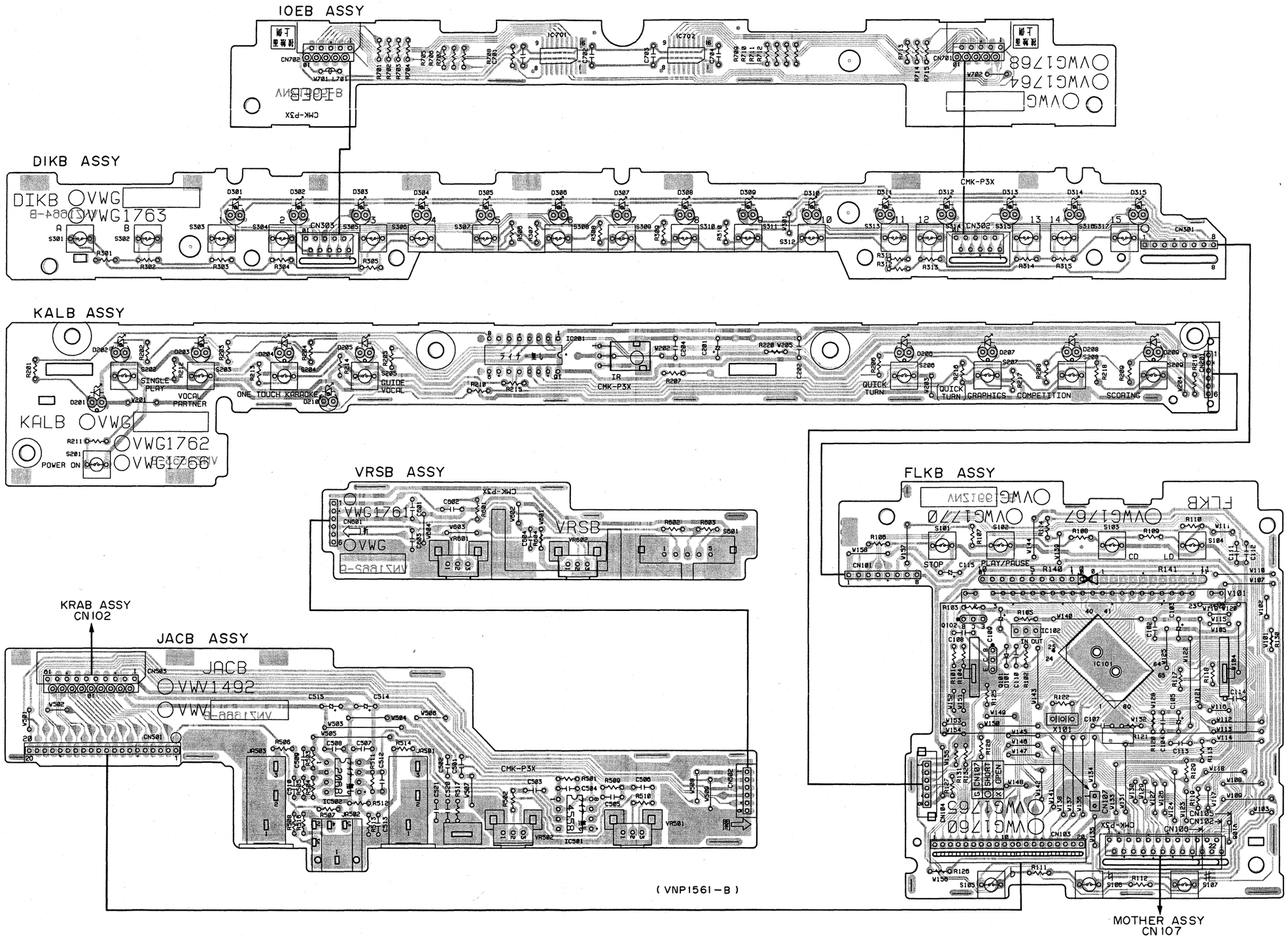
F:Filament G1~G8:Grid S1~S13:Anode NP:No pin



• This diagram is viewed from the mounted parts side.

PCB – 3



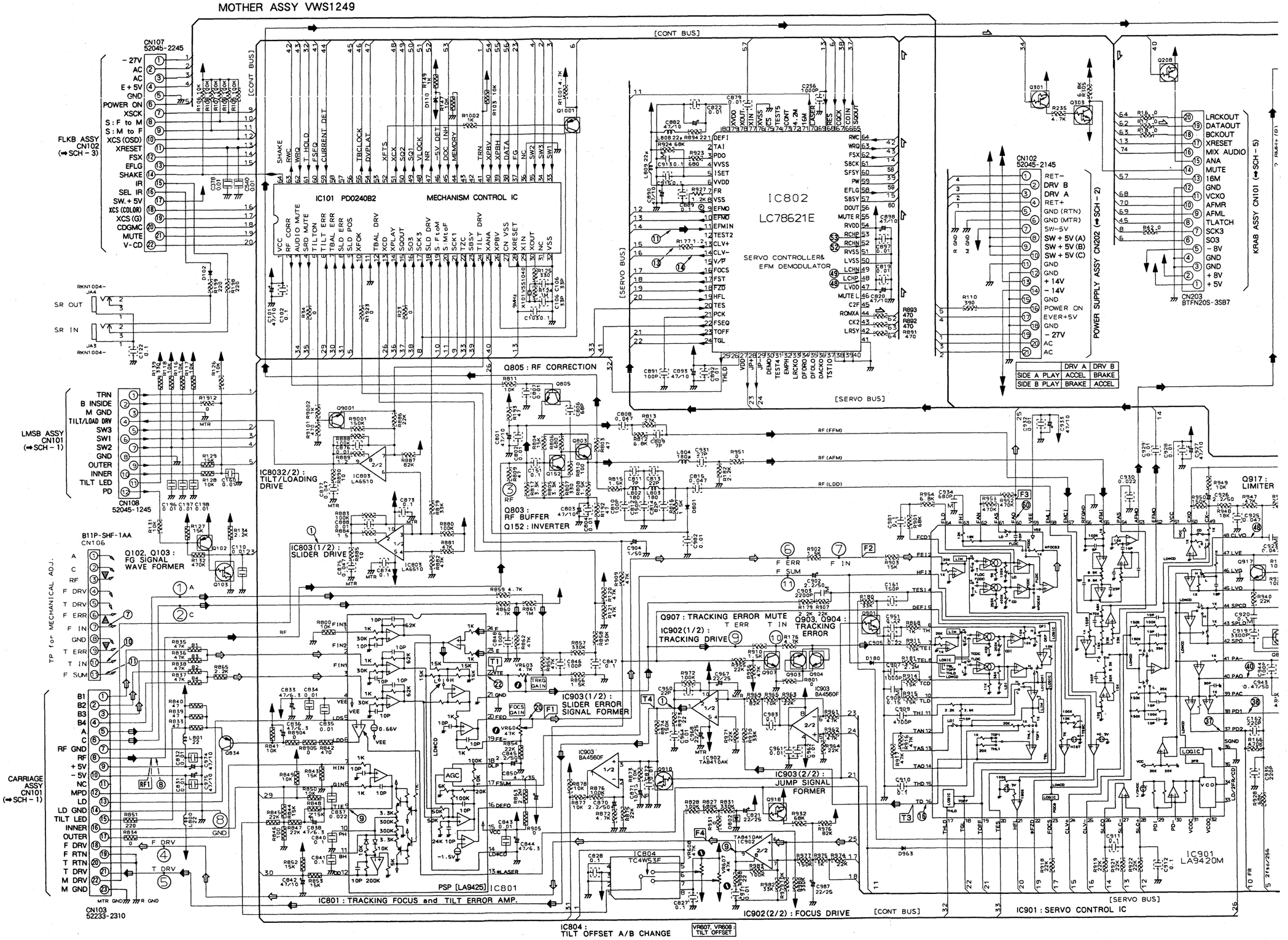


- This diagram is viewed from the mounted parts side.

- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

CLD-V870

3.4 MOTHER ASSY



SCH-4 MOTHER ASSY

[CONT BUS]

Q392 : MUTE SWITCH

Q391, Q393, Q394 : RF AMP.

SRD MUTE

RF for AFM & AC-3

[CONT BUS]

MECHANISM CONTROL IC

IC802
LC78621E
SERVO CONTROLLER& EFM DEMODULATOR

[SERVO BUS]

CN102
52045-2145

1	RET–
2	DRV B
3	DRV A
4	RET+
5	GND (RTN)
6	GND (MTR)
7	SW–5V
8	SW + 5V (A)
9	SW + 5V (B)
10	SW + 5V (C)
11	GND
12	GND
13	+ 14V
14	– 14V
15	GND
16	POWER ON
17	EVER+5V
18	– 27V
19	GND
20	AC
21	AC

POWER SUPPLY ASSY CN202 (➡SCH – 2)

	DRV A	DRV B
SIDE A PLAY	ACCEL	BRAKE
SIDE B PLAY	BRAKE	ACCEL

CN203
BTFN20S-3SB7

20	LRCKOUT
19	DATAOUT
18	BCKOUT
17	XRESET
16	MIX AUDIO
15	ANA
14	MUTE
13	16M
12	GND
11	VCXO
10	AFMR
9	AFML
8	TLATCH
7	SCK3
6	SO3
5	– 8V
4	GND
3	GND
2	+ 8V
1	+ 5V

KRAB ASSY CN101 (➡SCH – 5)

IC351 : FM AUDIO DECODER

Q805 : RF CORRECTION

Q803 :
RF BUFFER
Q152 : INVERTER

RF (EFM)

RF (AFM)

RF (LDD)

IC904(1/2, 2/2) :
CURRENT DETECT
for SPINDLE ERROR

Q917 :
LIMITER

IC905(1/2) :
VREF AMP.

Q907 : TRACKING ERROR MUTE

IC902(1/2) :
TRACKING DRIVE

Q903, Q904 :
TRACKING
ERROR

IC903(1/2) :
SLIDER ERROR
SIGNAL FORMER

IC903(2/2) :
JUMP SIGNAL
FORMER

Q908 :
GAIN CONTROL

IC905(2/2) :
CURRENT FEED BACK

F ERR

F IN

F SUM

PSP [LA9425] IC801

NG FOCUS and TILT ERROR AMP.

IC902(2/2) : FOCUS DRIVE

IC804 :
TILT OFFSET A/B CHANGE

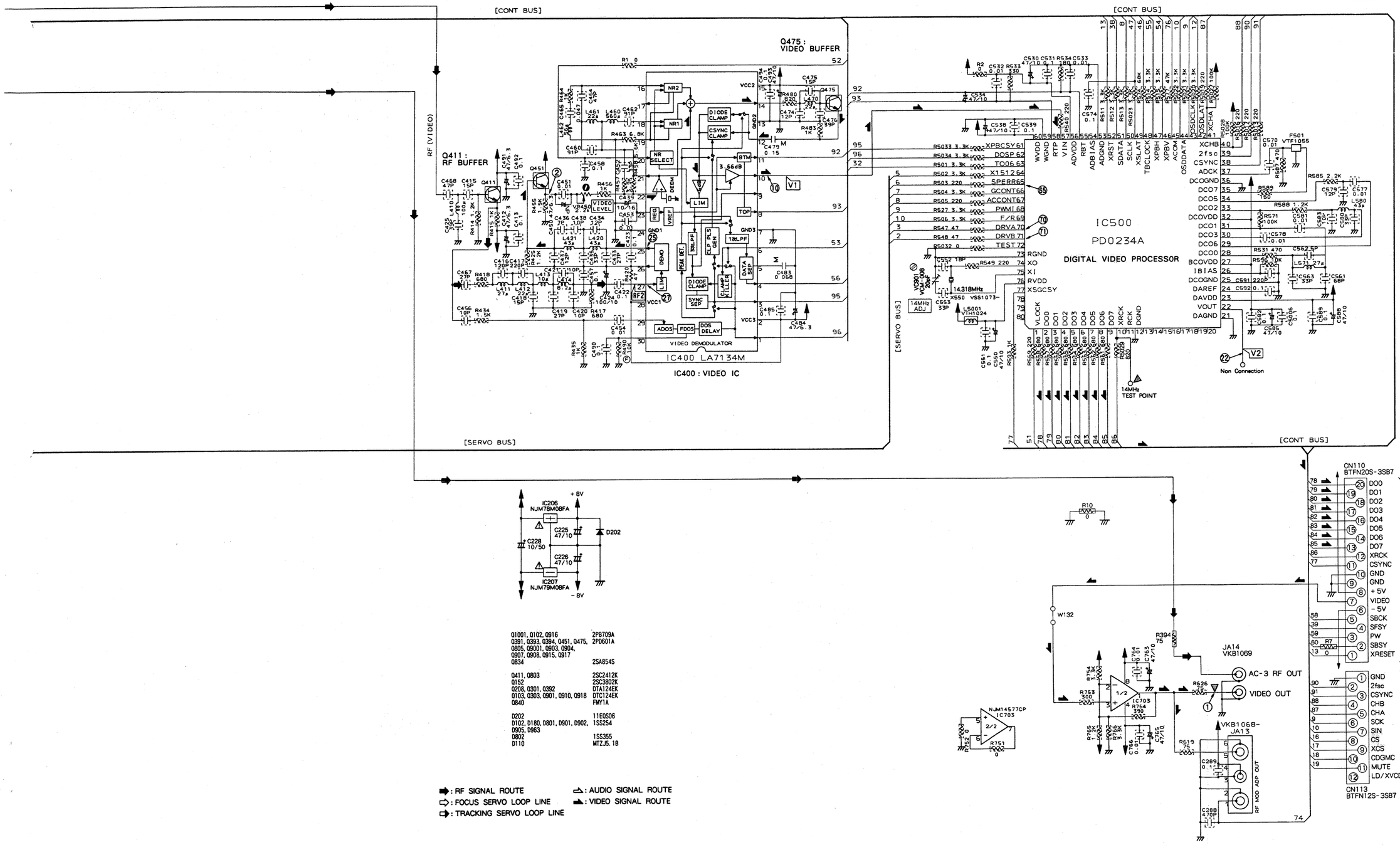
VR607, VR608 :
TILT OFFSET

IC901 : SERVO CONTROL IC

[SERVO BUS]

[CONT BUS]

SCH - 4



Q1001, Q102, Q916	2PB709A
Q391, Q393, Q394, Q451, Q475, Q805, Q9001, Q903, Q904, Q907, Q908, Q915, Q917	2PD601A
Q834	2SA854S
Q411, Q803	2SC2412K
Q152	2SC3802K
Q208, Q301, Q392	DTA124EK
Q103, Q303, Q901, Q910, Q918	DTC124EK
Q840	FMY1A
D202	11EQS06
D102, D180, D801, D901, D902, D905, D963	1SS254
D802	1SS355
D110	MTZJ5.1B

➡: RF SIGNAL ROUTE
⇨: FOCUS SERVO LOOP LINE
⇨: TRACKING SERVO LOOP LINE
⇦: AUDIO SIGNAL ROUTE
◀: VIDEO SIGNAL ROUTE

WAVEFORMS AND VOLTAGE

MOTHER ASSY

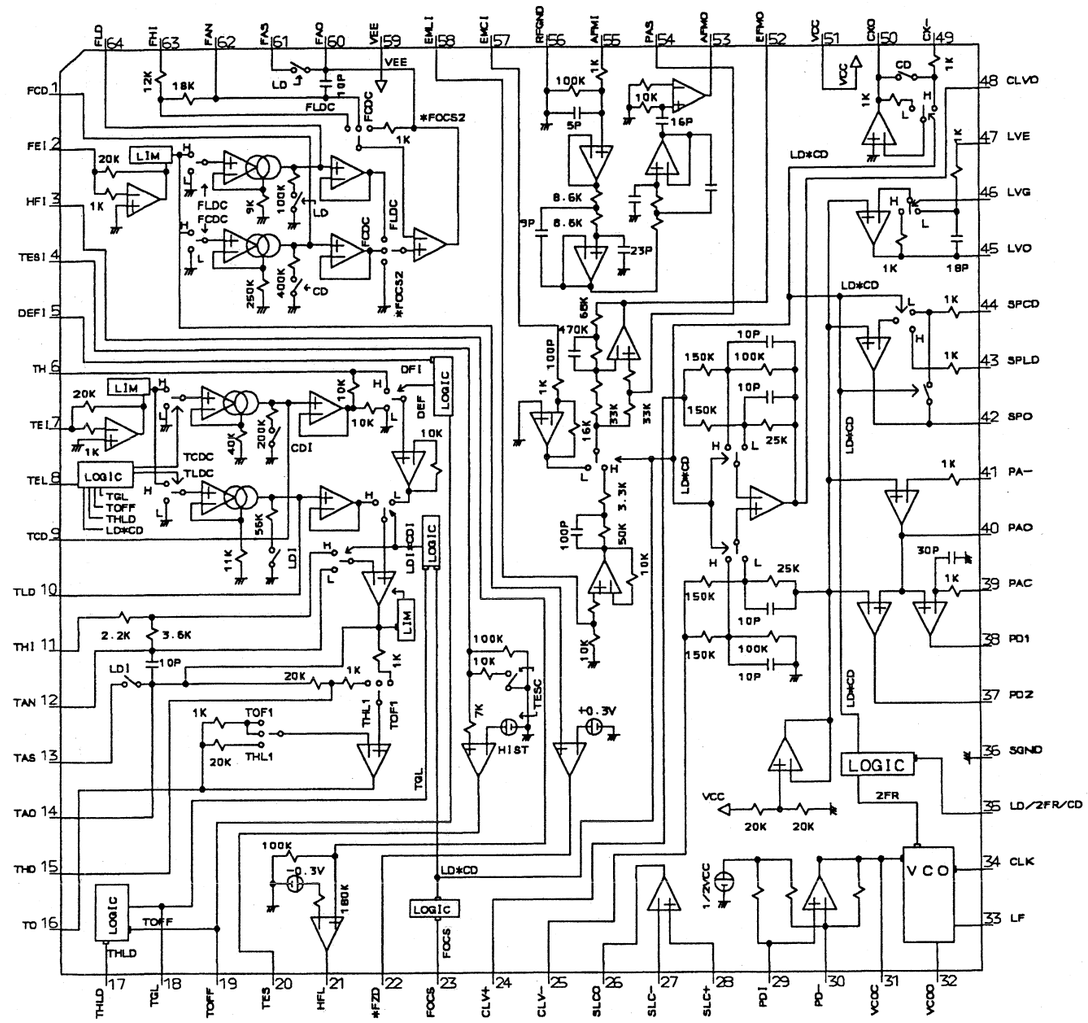
Note : (No.) in the table correspond to the pin number.

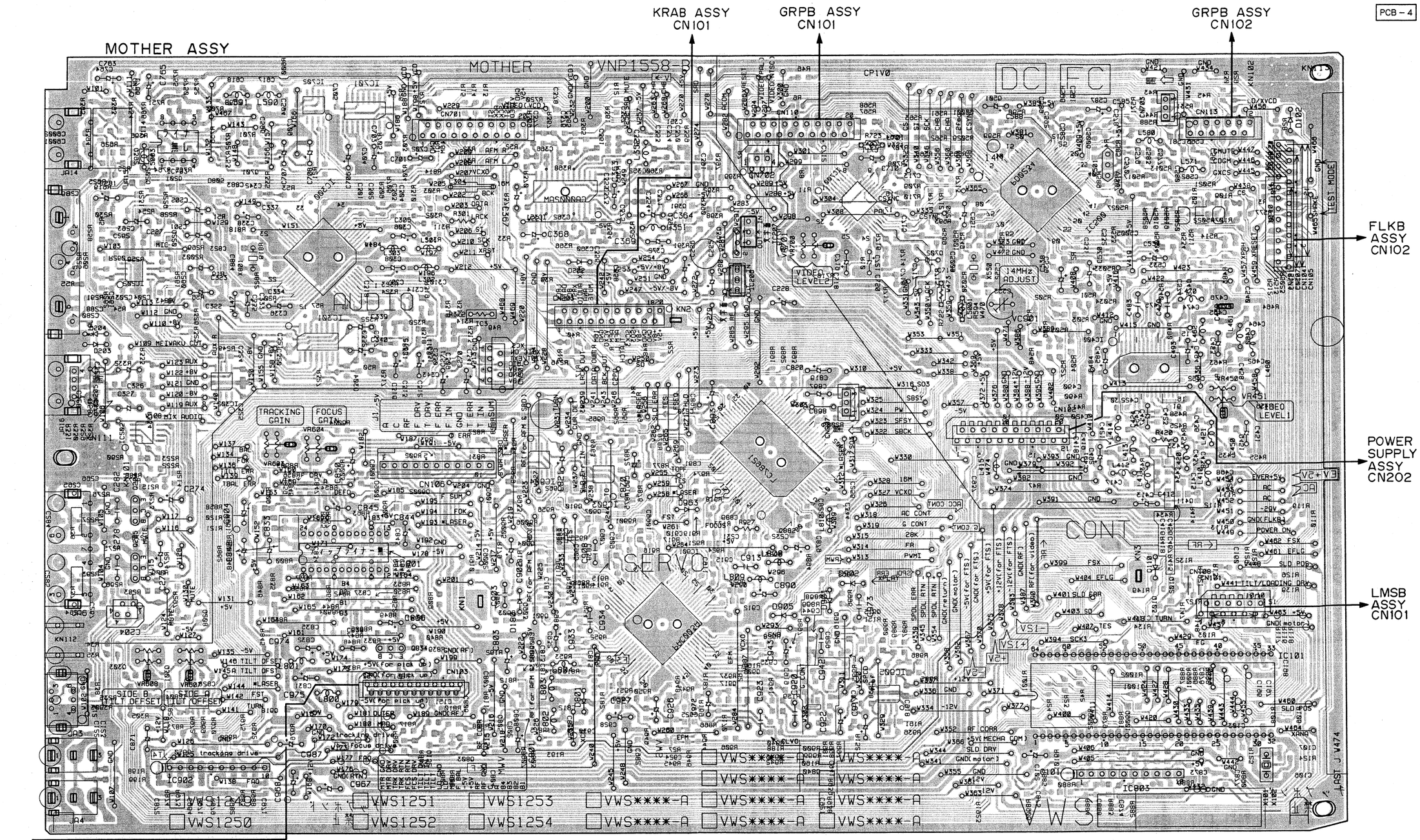
Measurement condition : In case when (D. audio) is written, at time when disc that has digital audio recording is played.

MOTHER ASSY

IC801 (LA9425)	IC901 (LA9420M)	CN106	Q451 Emitter	IC400 (LA7134M)	IC500 (PD0234A)
T1(22) 5ms/div 200mVp-p 0V DC mode	T3(16) 5ms/div 500mVp-p 0V DC mode	(7)(F2) 5ms/div 200mVp-p 0V DC mode	(2) 10μs/div 400mVp-p AC mode	V1(10) 10μs/div 1.6Vp-p 0V DC mode	V2(22) 10μs/div 1Vp-p DC mode
F1(20) 5ms/div 100mVp-p 0V DC mode	F3(60) 5ms/div 1Vp-p 0V DC mode	(10) 5ms/div 100mVp-p 0V DC mode	JA14 VIDEO OUT (1) 10μs/div 1Vp-p (75Ω termination) 0V DC mode	RF2(27) 2ms/div 400mVp-p AC mode	(65) 5ms/div 5Vp-p 0V DC mode
(9) 10ms/div 0.2Vp-p 0V DC mode	(38) 10μs/div 5Vp-p 0V (37) 0V DC mode	(11) 5ms/div 0V 0.2Vp-p DC mode		(25) 10μs/div 1Vp-p 0V DC mode	(71) 10μs/div 5Vp-p 0V (70) 0V DC mode
IC802 (LC78621E)	(40) 10ms/div 0.3Vp-p 0V DC mode	CN103 RF1(8) 2ms/div 600mVp-p AC mode			
(11) 0.5μs/div 1.6Vp-p 0V DC mode	(48) 50μs/div 1Vp-p 0V DC mode				
(13) 50μs/div 5Vp-p 0V (14) 0V DC mode	IC902 (TA8410AK) T4(1) 5ms/div 2Vp-p 0V DC mode				
(48),(53) 0.2μs/div 5Vp-p 0V (49),(52) 5Vp-p 0V DC mode					
IC803 (LA6510) (1) 2ms/div 1.8Vp-p 0V DC mode	F4(9) 5ms/div 5Vp-p 0V DC mode				

● The Inside Block Diagram of IC901 (LA9420M)





- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

3.5 KRAB ASSY

KRAB ASSY VWV1491

SCH-5

: AUDIO SIGNAL ROUTE
(MIC) : AUDIO SIGNAL ROUTE (MIC)
(S) : SCORING SIGNAL ROUTE

CN102 52045-1945
JACB ASSY CN503 (➡SCH-3)
+8V, GND, -8V, MIC1, MIC2, BATTLE, XIN/EX, MIC1/X2, XMIC ON, XSSVC, MICSENS, XREQ, TDATA, XDRDY, XCS, RDATA, XSCK, A/XD, THRU

JA101 AKB7050
R AUX IN
CHASSIS GND
IC104(1/2, 2/2): BUFFER AMP.
IC104 NJM4558DX

IC103 BU4053BCF
AUX, MIC2, MIC1
MULTI SELECTOR
AFM LCH
AFM RCH
AUX

IC105(1/2, 2/2): LOW PASS FILTER
IC105 NJM4558DX

IC101 PM0007A
DIGITAL SOUND PROCESSOR
AVSS1 AI LIN

IC102 PS-RAM LH5P832N-12
RAMIO0–RAMIO7

CN101 BTFN20P-3RD7
LRCK IN, DATA IN, BCK IN, XRESET, MIXAUDIO ANA, MUTE, 16M, GND, VCXO, AFM RCH, AFM LCH, TLATCH, SCK3, SO3, -8V, GND, GND, +8V, +5V
MOTHER ASSY CN203 (➡SCH-4)

Q101 DTC124EK
Q102 DTC124EK
Q103 2SD2114K
Q104 DTC124EK
Q105 2SK184
Q301 2SD2114K
Q302 2SD2114K
Q303 2SD2114K
Q304 2SD2114K
Q305 DTC124EK
Q306 2SD2114K
Q307 2SD2114K

D101 DA204K
D102 DA204K
D103 DA204K
D104 DA204K
D105 DA204K
D106 DA204K
D107 1SS355
D301 KV1851
D302 DA204K

IC106(1/2): LOW PASS FILTER for SCORING
IC106(2/2): AMP. for SCORING
IC106 NJM4558DX

IC107(1/2): LOW PASS FILTER for MIC ECHO
IC107(2/2): MIC MIXING AMP.
IC107 NJM4558DX

IC108(2/2): MIC AMP.
IC108 NJM4558DX

IC109 NJM4558DX
MIC INPUT DETECTOR

IC301 TC9400F D/A CONVERTER
VSS1081 (16.9344MHz) X301

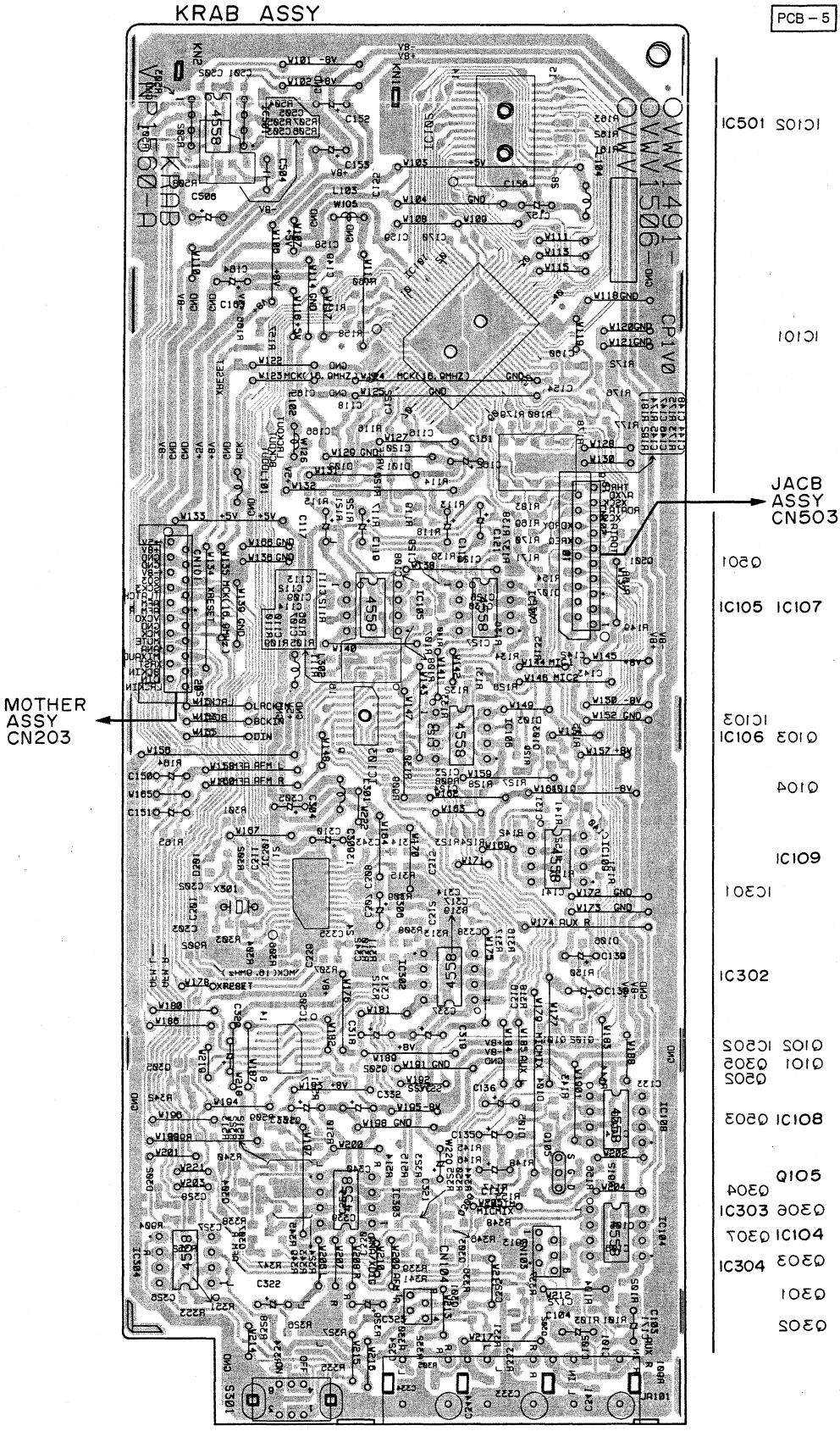
IC302(1/2, 2/2): LOW PASS FILTER
IC302 NJM4558DX

IC303(1/2, 2/2): MIXING AMP.
IC303 NJM4558DX

IC304(1/2, 2/2): BUFFER
IC304 NJM4558DX

ATTENUATOR VSH1009
S301
JA101 AKB7050 L OUT, R OUT

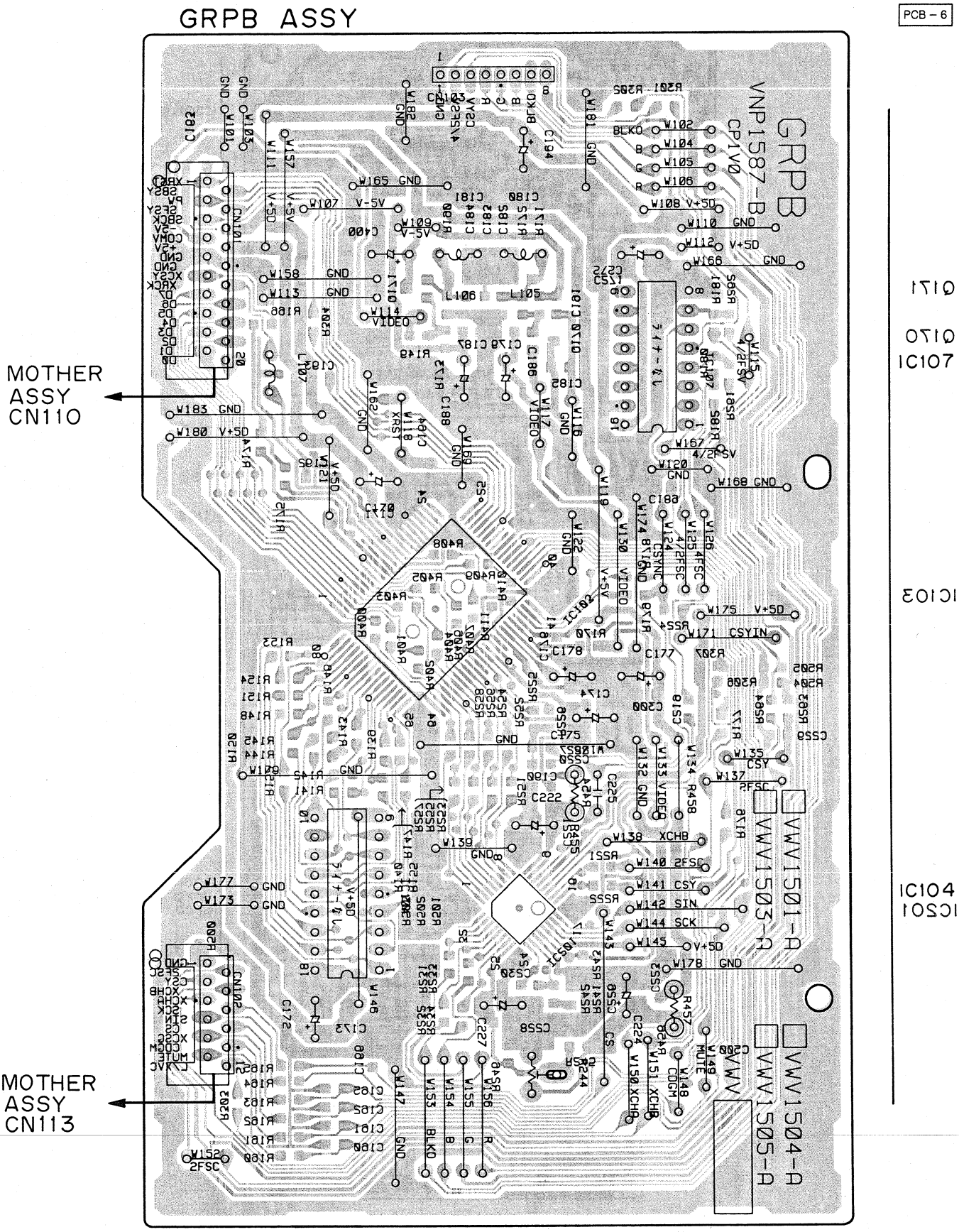
XRESET



- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

3.6 GRPB ASSY

PCB – 6



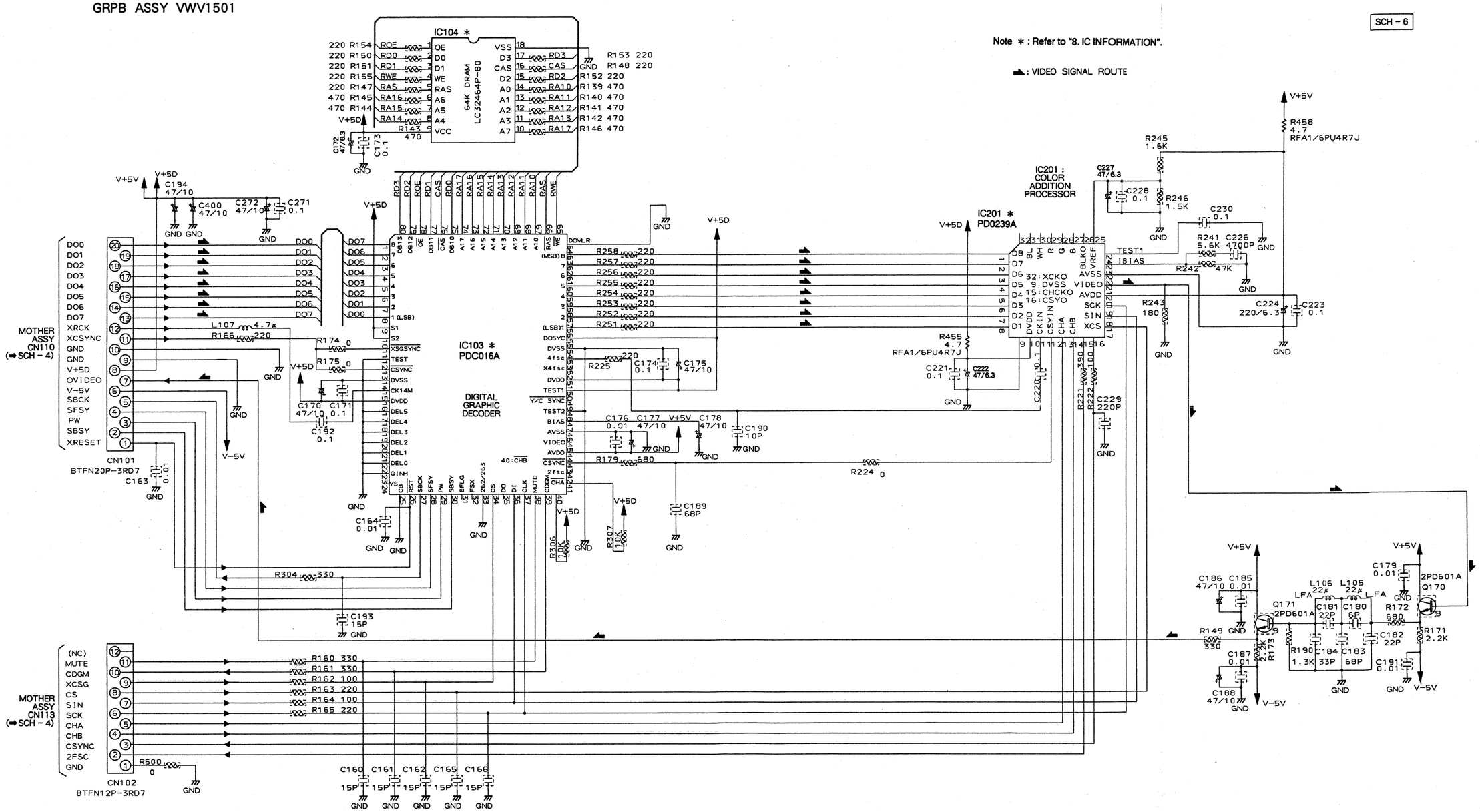
- This diagram is viewed from the mounted parts side.
- The parts mounted on this PCB include all necessary parts for several destinations.
  For further information for respective destinations, be sure to check with the schematic diagram.

GRPB ASSY VWV1501

SCH - 6

Note * : Refer to "8. IC INFORMATION".

: VIDEO SIGNAL ROUTE



4. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω → 56 × 10¹ → 561 ····· RD1/4PU 5 6 1 J
47k Ω → 47 × 10³ → 473 ····· RD1/4PU 4 7 3 J
0.5 Ω → 0R5 ····· RN2H 0 R 5 K
1 Ω → 1R0 ····· RS1P 1 R 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω → 562 × 10¹ → 5621 ····· RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
NSP	MACB ASSY		VWM1535
NSP	├ PKSB ASSY		VWG1555
NSP	├ FG ASSY		VWG1556
NSP	├ TNSB ASSY		VWG1557
NSP	├ BISB ASSY		VWG1558
NSP	└ LMSB ASSY		VWG1612
⚠	POWER SUPPLY ASSY		VWR1269
NSP	FRPB ASSY		VWM1691
	├ FLKB ASSY		VWG1760
NSP	├ VRSB ASSY		VWG1761
	├ KALB ASSY		VWG1762
NSP	├ DIKB ASSY		VWG1763
NSP	├ IOEB ASSY		VWG1764
NSP	└ JACB ASSY		VWV1492
	MOTHER ASSY		VWS1249
	KRAB ASSY		VWV1491
	GRPB ASSY		VWV1501
MACB ASSY			
OTHERS			
	PC Board MACB		VNP1479
PKSB ASSY			
SWITCHES			
	S104, S105		DSG1017
FG ASSY			
SEMICONDUCTOR			
	D101		GP1S24
TNSB ASSY			
SWITCH			
	S111		DSG1017
BISB ASSY			
SWITCH			
	S112		DSG1017
LMSB ASSY			
SWITCHES			
	S101-S103		DSG1017
OTHERS			
	CN101	12P FFC CONNECTOR	52044-1245
POWER SUPPLY ASSY			
SEMICONDUCTORS			
	IC201		HA17431P
⚠	IC210		ICP-N15
⚠	IC211		ICP-N20
	IC202		UPC358C
	Q207, Q208, Q214		2SA933S
	Q205, Q206, Q210		2SC1740S
⚠	Q102, Q103		2SC3377
⚠	Q213		2SD2007
⚠	Q203		T7F4S
	Q204		T7F4S
⚠	Q201		T7F4T
	Q202		T7F4T
⚠	Q101		VZF1037
⚠	Q209		VZF1040
	D206		VZF1039

Mark	No.	Description	Part No.
⚠	D104		1SS270A
	D209-D212, D216		AG01Z-VO
⚠	D101		D2SB60F4004
⚠	D102		EG01C
⚠	D105		K1V24
⚠	D103		MTZJ2.7B
	D218		MTZJ8.2B
⚠	D200		PS2501L1-1M
	D207		RD33FB2
	D202, D203		S3LA20
	D204		S3S4M
RESISTORS			
⚠	R257	(68Ω, 1/4W)	VCN1048
⚠	R258	(8.2Ω, 1/4)	VCN1050
⚠	R256	(0.22Ω, 1/2W)	VCN1055
OTHERS			
⚠	F101	FUSE(2A)	REK1078
⚠	F203	FUSE(136°C)	VEK1033
⚠	F201, F202	FUSE(136°C)	VEK1034
⚠	F204, F205	FUSE(1A/125V)	VEK1036
FRPB ASSY			
OTHERS			
	PC Board FRPB		VNP1561
FLKB ASSY			
SEMICONDUCTORS			
	IC101		PD3340A
	IC102		S-806D
	Q102		DTA144ES
	Q101		DTC114ES
	D101		1SS252
SWITCHES			
	S101-S107		ASG1034
CAPACITORS			
	C109		CEAL100M16
	C103, C105, C115		CEAL470M6R3
	C111-C113		CKPUYB101K50
	C107, C110		CKPUYB102K50
	C108		CKPUYF223Z25
	C102, C104		CKPUYY103N16
RESISTORS			
	R110, R113, R114, R127		RN1/6PQ1001F
	Other Resistors		RD1/4PU□□□J

Mark	No.	Description	Part No.
OTHERS			
	CN101	2.5mm PITCH PIN HEADER	1068-08C-PP
	CN102	FFC BOTTOM CONNECTOR 22P	52492-2220
	CN107	2.54mm PITCH PIN HEADER	9202B-1-02P
	CN103	20P CONNECTOR	BTMK20S-1S
	X101	CERAMIC RESONATOR(8MHz)	EFOEC8004A4
	CN104	2mm PITCH CONNECTOR PLUG	TKC-A06P-C1
	V101	FL TUBE	VAW1039
		SPACER	VEC1599
		FL HOLDER	VNF1091
VRSB ASSY			
SWITCH			
	S601		VSH1011
CAPACITORS			
	C602		CKPUYB102K50
	C601, C603, C604		CKPUYY103N16
RESISTORS			
	VR601, VR602	(10kΩ)	VCS1040
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN601	FJ CONNECTOR 6P	06P-FJ
		PCB HOLDER	VNE2026
KALB ASSY			
SEMICONDUCTORS			
	IC201		BU2090
	D206, D207		SLR-342MCT31
	D201, D210		SLR-342VCT31
	D202-D205, D208, D209		SLR-342YCT31
SWITCHES			
	S201-S209		ASG1034
CAPACITORS			
	C202, C204		CKPUYY103N16
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
		REMOTE SENSOR UNIT	GP1U26X
	CN201	2mm PITCH B TO B CONNECTOR	TKC-A06X-B1

Mark	No.	Description	Part No.
DIKB ASSY			
SEMICONDUCTORS			
	D301-D315		SLR-342MCT31
SWITCHES			
	S301-S317		ASG1034
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
	CN302, CN303		52492-1020
		FFC BOTTOM CONNECTOR 10P	
	CN301		9133S-08A
		BOARD TO BOARD CONNECTOR 8P	
IOEB ASSY			
SEMICONDUCTORS			
	IC701, IC702		BU2090F
CAPACITORS			
	C701, C703		CKPUYY103N16
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
	CN701, CN702	10P FFC CONNECTOR	52044-1045
JACB ASSY			
SEMICONDUCTORS			
	IC502		NJM2068D
	IC501		NJM4558DX
CAPACITORS			
	C514, C515		CEJA101M10
	C504, C505		CKPUYB271K50
	C520		CKPUYF223Z25
	C509, C512		CKPUYX122M16
	C510, C513		CKPUYX152M16
	C501, C502, C507, C508		CKPUYY103N16
	C503, C506		CQMA104J50
RESISTORS			
	R508		RN1/6PQ2001F
	R507		RN1/6PQ3001F
	VR501, VR502	(10kΩ)	VCS1040
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN502	FJ CONNECTOR 6P	06R-FJ
	CN503	19P FFC CONNECTOR	52044-1945
	CN501	20P CONNECTOR	BTMK20P-1R
	JA502	HEADPHONES JACK	RKN1006
	JA501, JA503	MICROPHONE JACK	VKN1147
		SNAP PLATE	VNE1102
		JACK HOLDER	VNE2054

Mark	No.	Description	Part No.
MOTHER ASSY			
SEMICONDUCTORS			
	IC904		BA10393F
	IC903, IC905		BA4560F
	IC351		CA0002AM
	IC803		LA6510
	IC400		LA7134M
	IC901		LA9420M
	IC801		LA9425
	IC802		LC78621E
	IC703		MC14577CP
⚠	IC206		NJM78M08FA
⚠	IC207		NJM79M08FA
	IC500		PD0234A
	IC101		PD0240B2
	IC902		TA8410AK
	IC804		TC4W53F
	Q1001, Q102, Q916		2PB709A
	Q391, Q393, Q394, Q451, Q475		2PD601A
	Q805, Q9001, Q903, Q904		2PD601A
	Q907, Q908, Q915, Q917		2PD601A
	Q834		2SA854S
	Q411, Q803		2SC2412K
	Q152		2SC3802K
	Q208, Q301, Q392		DTA124EK
	Q103, Q303, Q901, Q910, Q918		DTC124EK
	Q840		FMY1A
	D202		11EQS06
	D102, D180, D801, D901, D902		1SS254
	D905, D963		1SS254
	D802		1SS355
	D110		MTZJ5.1B
COILS AND FILTER			
	L413		LAU100J
	L410		LAU101J
	L351, L802-L804		LAU181J
	L352, L412, L461, L470		LAU220J
	L800, L801, L808, L809		LAU220J
	L411, L571		LAU270J
	L420, L421, L580		LAU430J
	L462		LAU560J
	L414		LAU8R2J
	L460		LFA561J
	F501		VTF1055
	L5001		VTH1024
CAPACITORS			
	C562		CCSQCH050C50
	C436, C809, C811		CCSQCH070D50
	C420, C421, C438, C456		CCSQCH100D50
	C583		CCSQCH100D50
	C370, C810, C846, C848, C891		CCSQCH101J50
	C944		CCSQCH101J50
	C434, C437, C474, C579		CCSQCH120J50
	C416		CCSQCH121J50
	C415, C418, C475		CCSQCH150J50
	C161, C353, C812		CCSQCH151J50

Mark	No.	Description	Part No.
	C352, C552		CCSQCH180J50
	C813, C950		CCSQCH220J50
	C162, C417, C591, C935		CCSQCH221J50
	C371, C419, C433, C467, C931		CCSQCH270J50
	C106, C107, C354, C435, C452		CCSQCH330J50
	C553, C563, C580		CCSQCH330J50
	C351, C425, C476		CCSQCH390J50
	C464, C468		CCSQCH470J50
	C288		CCSQCH471J50
	C375, C561, C806		CCSQCH680J50
	C374, C814		CCSQCH820J50
	C460, C462		CCSQCH910J50
	C439		CEAL100M16
	C412, C484, C491, C833, C836		CEAL470M6R3
	C844		CEAL470M6R3
	C838		CEALNP470M6R3
	C972		CEANP220M10
	C450		CEANP470M6R3
	C904		CEAS010M50
	C228, C367		CEAS100M50
	C364, C424, C917		CEAS101M10
	C821, C922, C967		CEAS220M25
	C845, C870, C902, C926		CEAS2R2M50
	C101, C225, C226, C363, C369		CEAS470M10
	C493, C530, C534, C538, C550		CEAS470M10
	C585, C588, C763, C765, C801		CEAS470M10
	C803, C820, C842, C882, C890		CEAS470M10
	C893, C898, C927, C933		CEAS470M10
	C974, C975		CEAS470M10
	C368, C943		CEASR47M50
	C968, C987		CEHAQ220M50
	C850		CEJA4R7M35
	C256, C490, C907		CKSQYB102K50
	C879		CKSQYB103K50
	C915, C981		CKSQYB104K25
	C919		CKSQYB332K50
	C361, C362		CKSQYB392K50
	C355-C358, C377, C909		CKSQYB472K50
	C110, C122, C160, C196-C198		CKSQYF103Z50
	C372, C373, C376, C378, C451, C454		CKSQYF103Z50
	C532, C533, C540, C570, C577, C578		CKSQYF103Z50
	C581, C802, C804, C807, C819		CKSQYF103Z50
	C822, C831, C832, C834, C835		CKSQYF103Z50
	C843, C872, C876, C888, C889		CKSQYF103Z50
	C892, C897, C918, C928, C929		CKSQYF103Z50
	C932, C937, C938, C941		CKSQYF103Z50
	C961, C962, C964, C971, C982		CKSQYF103Z50
	C102, C103, C151, C289		CKSQYF104Z25
	C365, C366, C391, C413		CKSQYF104Z25
	C422, C423, C453, C457, C458		CKSQYF104Z25
	C485, C492, C494, C5006, C531		CKSQYF104Z25
	C539, C551, C574, C582, C589		CKSQYF104Z25
	C592, C764, C766, C827, C828		CKSQYF104Z25
	C840, C841, C847, C873, C874		CKSQYF104Z25
	C901, C910-C912, C976, C983		CKSQYF104Z25

Mark	No.	Description	Part No.
	C837, C921, C930		CKSQYF223Z50
	C359, C360, C905, C951		CKSQYF224Z25
	C465, C808, C815, C875, C877		CKSQYF473Z25
	C924, C925		CKSQYF473Z25
	C942		CQMA103J50
	C913, C920		CQMA104J50
	C479, C908, C973		CQMA154J50
	C903		CQMA222J50
	C923		CQMA473J50
	C934		CQMA681J50
	C483		CQMA683J50
	C871	(10μF/16V NP)	VCH1152
	VC901	(20pF)	VCM-008

RESISTORS

	R927		RD1/4PU122J
	R420		RD1/4PU470J
	R490, R987, R989		RN1/10SE103D
	R880, R883		RN1/10SE104D
	R879, R986, R990		RN1/10SE333D
	R881, R882		RN1/10SE473D
	VR450	(2.2kΩ)	PCP1025
	VR603	(4.7kΩ)	RCP1020
	VR604, VR607, VR608	(47kΩ)	RCP1047
	Other Resistors		RS1/10S□□□J

OTHERS

	CN108	12P FFC CONNECTOR	52045-1245
	CN102	21P FFC CONNECTOR	52045-2145
	CN107	22P FFC CONNECTOR	52045-2245
	CN103	23P FFC CONNECTOR	52233-2310
	CN106	11P TOP POST	B11P-SHF-1AA
	CN113	B TO B CONNECTOR 12P	BTFN12S-3SB7
	CN110, CN203	B TO B CONNECTOR 20P	BTFN20S-3SB7
	JA3, JA4	REMOTE CONTROL JACK	RKN1004
		PCB BINDER	VEF1040
	JA13	RF PIN JACK	VKB1068
	JA14	2P PIN JACK	VKB1069
		SCREW TERMINAL	VNE1948
		EARTH METAL	VNF1084
	X101	CERAMIC RESONATOR(9.00MHz)	VSS1040
	X550	CRYSTAL RESONATOR(14.318MHz)	VSS1073

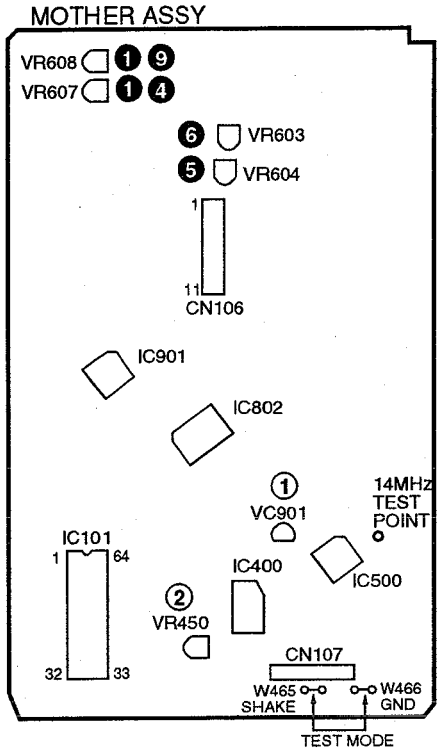
Mark	No.	Description	Part No.
KRAB ASSY			
SEMICONDUCTORS			
	IC103		BU4053BCF
	IC102		LH5P832N-12
	IC104-IC109, IC302-IC304		NJM4558DX
	IC101		PM0007A
	IC301		TC9400F
	Q103, Q301-Q304, Q306, Q307		2SD2114K
	Q105		2SK184
	Q101, Q102, Q104, Q305		DTC124EK
	D107		1SS355
	D101-D106, D302		DA204K
	D301		KV1851
COILS			
	L102, L104		LFA100J
	L301, L302		LFA220J
	L101		LFA3R9J
SWITCH			
	S301		VSH1009
CAPACITORS			
	C342, C343		CCSQCH050C50
	C116, C118, C120, C122		CCSQCH101J50
	C312, C315		CCSQCH151J50
	C130		CCSQCH181J50
	C303, C336		CCSQCH220J50
	C144-C148		CCSQCH390J50
	C313, C314, C316, C317		CCSQCH430J50
	C109, C112		CCSQCH680J50
	C324, C325, C344		CCSQSL102J50
	C101, C102		CCSQSL331J50
	C103, C104		CEANP010M50
	C150, C151		CEANP2R2M50
	C135, C136, C138, C139		CEAS100M25
	C322, C323		CEAS100M25
	C161, C163, C304, C306, C309		CEAS101M10
	C318, C319, C331, C332		CEAS101M10
	C119, C121		CEAS2R2M50
	C137		CEAS330M16
	C115, C117		CEAS470M16
	C149, C154, C302		CKSQYB103K50
	C131		CKSQYB104K25
	C132		CKSQYB122K50
	C108, C111, C125, C129, C328		CKSQYB223K50
	C107, C110		CKSQYB332K50
	C128		CKSQYB472K50
	C105, C106, C113, C114		CKSQYF103Z50
	C123, C124, C126, C127		CKSQYF103Z50
	C133, C134, C140, C141, C301		CKSQYF103Z50
	C305, C310, C326, C327, C335		CKSQYF103Z50
	C337, C338		CKSQYF103Z50
	C142, C143, C157-C160, C162		CKSQYF104Z25
	C164, C170, C307, C308, C311		CKSQYF104Z25
	C333, C334, C341		CKSQYF104Z25

Mark	No.	Description	Part No.
RESISTORS			
	R113-R116		RN1/10SE102D
	R312, R313, R318, R319		RN1/10SE473D
	R322-R325		RN1/10SE473D
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN102	19P FFC CONNECTOR	52045-1945
	JA101	6P PIN JACK	AKB7050
	CN101	B TO B CONNECTOR 20P	BTFN20P-3RD7
		PCB BINDER	VEF1040
	X301	CRYSTAL RESONATOR (16.9344MHz)	VSS1081
GRPB ASSY			
SEMICONDUCTORS			
	IC104		LC32464P-80
	IC201		PD0239A
	IC103		PDC016A
	Q170, Q171		2PD601A
COILS			
	L105, L106		LFA220J
	L107		LFA4R7J
CAPACITORS			
	C180		CCSQCH060D50
	C190		CCSQCH100D50
	C160-C162, C165, C166, C193		CCSQCH150J50
	C181, C182		CCSQCH220J50
	C229		CCSQCH221J50
	C184		CCSQCH330J50
	C183, C189		CCSQCH680J50
	C172, C222, C227		CEAL470M6R3
	C170, C175, C177, C178, C186		CEAS470M10
	C188, C194, C272, C400		CEAS470M10
	C224		CEJA221M6R3
	C226		CKSQYB472K50
	C163, C164, C176, C179, C185		CKSQYF103Z50
	C187, C191		CKSQYF103Z50
	C171, C173, C174, C192		CKSQYF104Z25
	C220, C221, C223, C228, C230		CKSQYF104Z25
	C271		CKSQYF104Z25
RESISTORS			
	R455, R458		RFA1/6PU4R7J
	Other Resistors		RS1/10S□□□J
OTHERS			
	CN102	B TO B CONNECTOR 12P	BTFN12P-3RD7
	CN101	B TO B CONNECTOR 20P	BTFN20P-3RD7

5. ADJUSTMENTS (調整方法)

1. ADJUSTMENT ITEMS AND LOCATION (調整項目と調整位置)

■Adjustment Points (PCB Part)



■Adjustment Items

[Mechanical Part]

❶ Tilt Offset Adjustment
(チルトオフセット調整)

❷ Tangential Direction Angle Adjustment for Side A
(A面タンジェンシャル傾き調整)

❸ Spindle Motor Centering Adjustment for Side A
(A面スピンドル芯出し調整)

❹ Crosstalk Check and Fine Tilt Offset Adjustment for Side A
(A面クロストーク確認及び、チルトオフセット微調)

❺ Focus Servo Loop Gain Adjustment
(フォーカスサーボループゲイン調整)

❻ Tracking Servo Loop Gain Adjustment
(トラッキングサーボループゲイン調整)

❼ Tangential Direction Angle Adjustment for Side B
(B面タンジェンシャル傾き調整)

❽ Spindle Motor Centering Adjustment for Side B
(B面スピンドル芯出し調整)

❾ Crosstalk Check and Fine Tilt Offset Adjustment for Side B
(B面クロストーク確認及び、チルトオフセット微調)

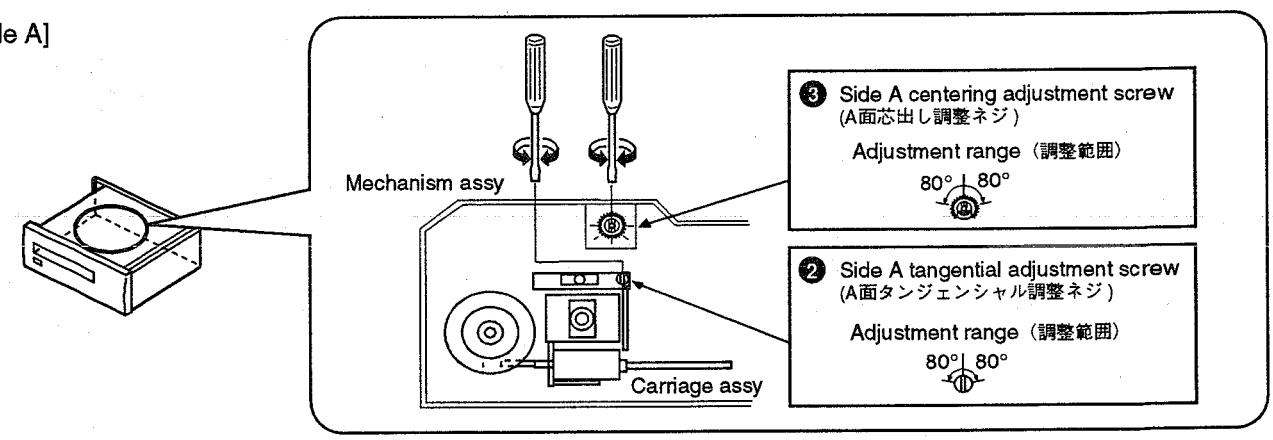
[Electrical Part]

① Master Clock Adjustment
(マスタークロック調整)

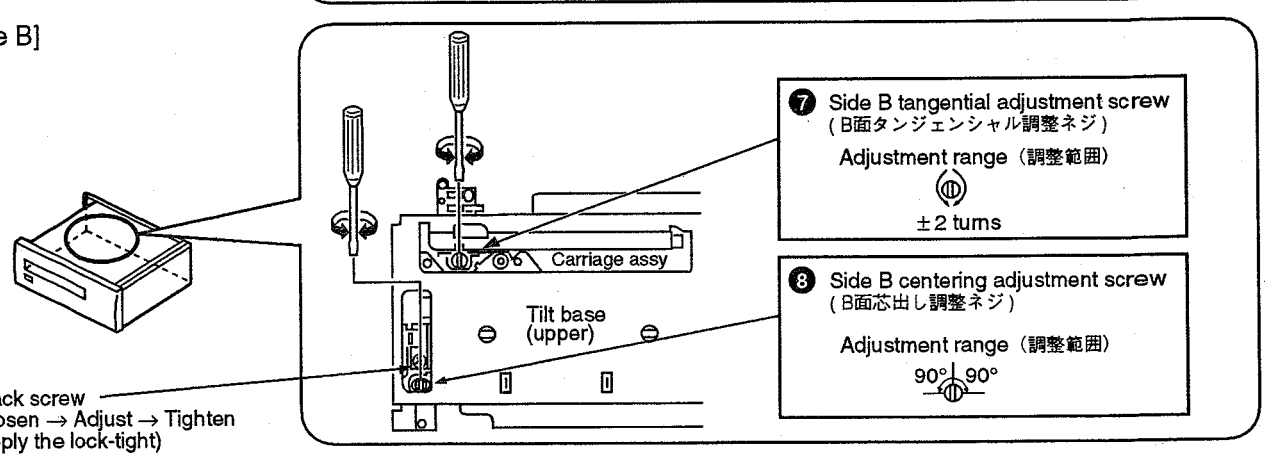
② Output Video Level Adjustment
(出力ビデオレベル調整)

■Adjustment Points (Mechanism Part)

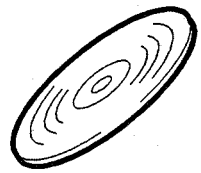
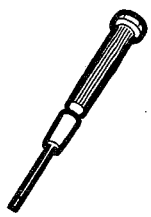
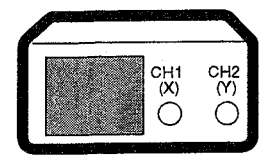
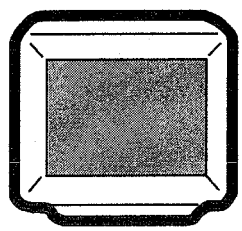
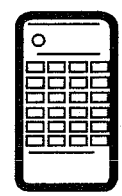
[Side A]



[Side B]

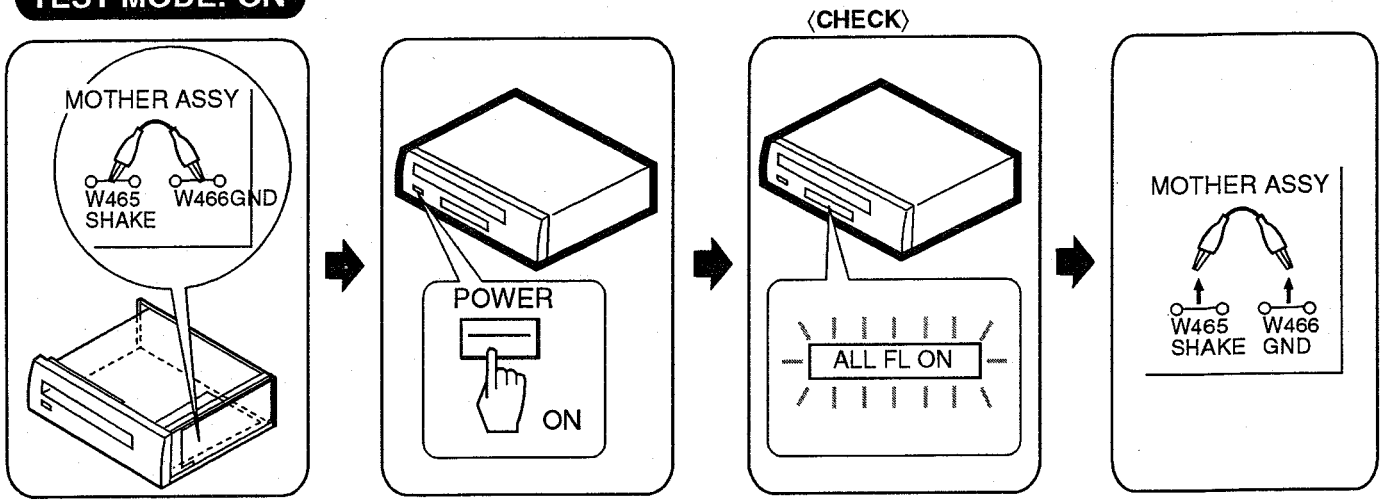


2. JIGS AND MEASURING INSTRUMENTS (調整に必要な治工具類)

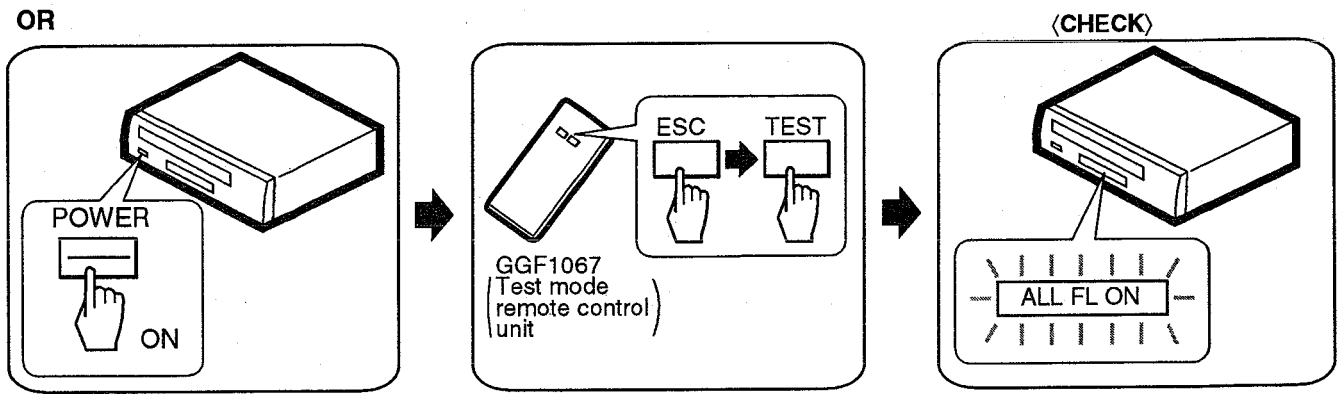
CD test disc (YEDS-7)	 LD test disc (GGV1012)	⊖ Screwdriver (medium)	⊖ Screwdriver (small)
 ⊖ Precise screwdriver	⊕ Screwdriver (large)	⊕ Screwdriver (medium)	 Dual-trace oscilloscope (with delay) Frequency band ≧ 40MHz
Frequency counter Display digit ≧ 8-digit	 TV monitor	 Test mode remote control unit (GGF1067)	

3. TEST MODE (テストモード)

TEST MODE: ON

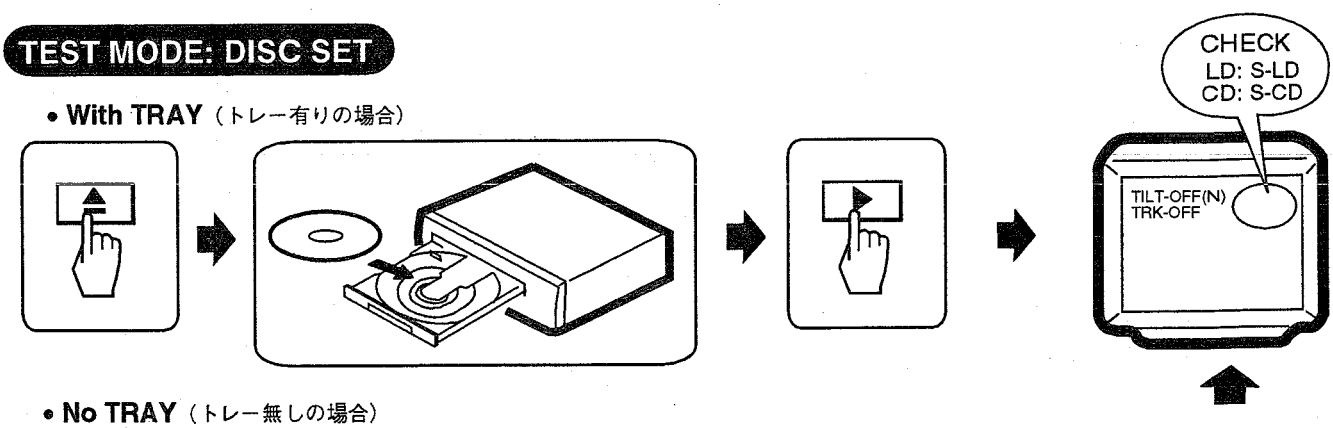


OR

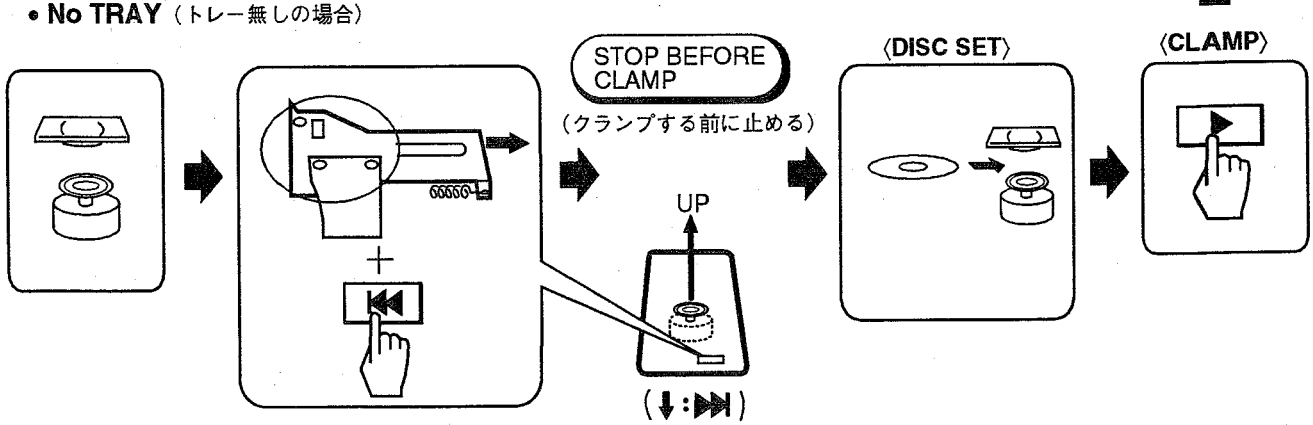


TEST MODE: DISC SET

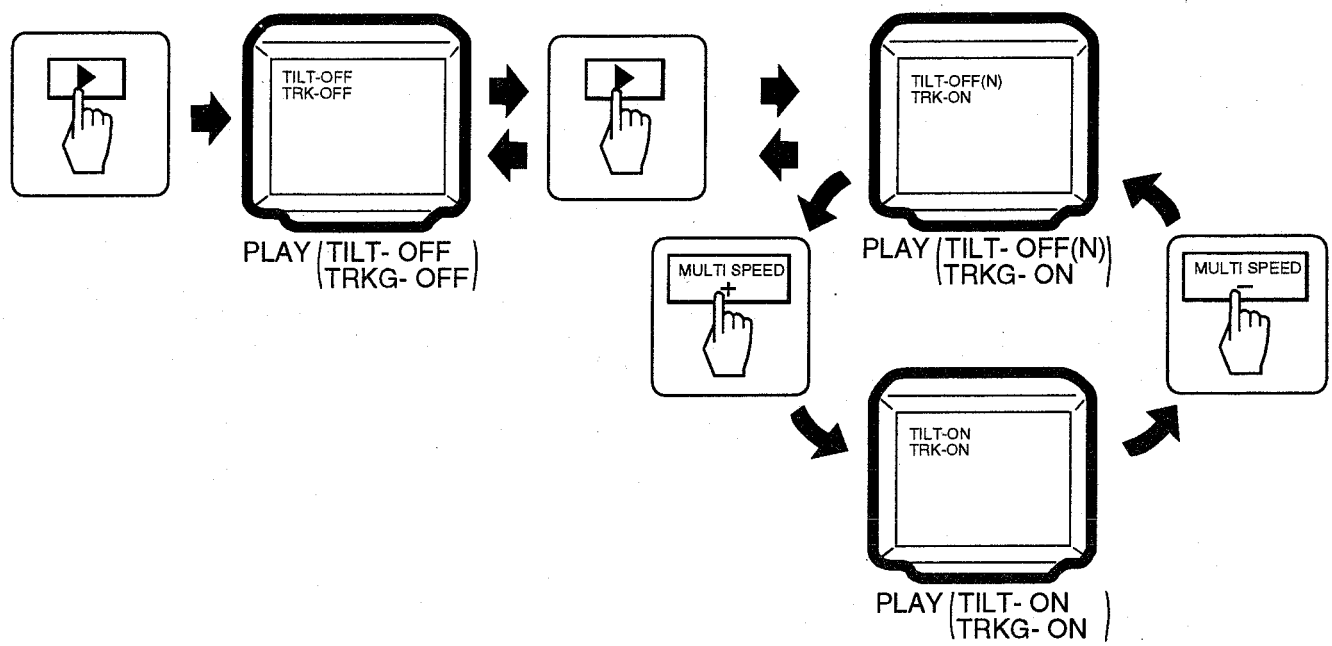
• **With TRAY** (トレー有りの場合)



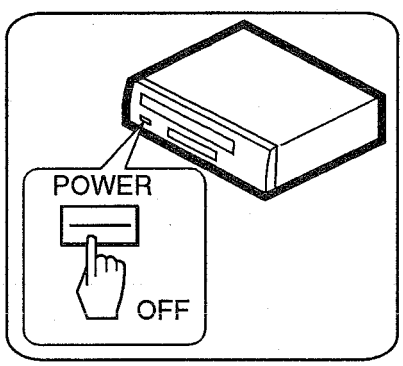
• **No TRAY** (トレー無しの場合)



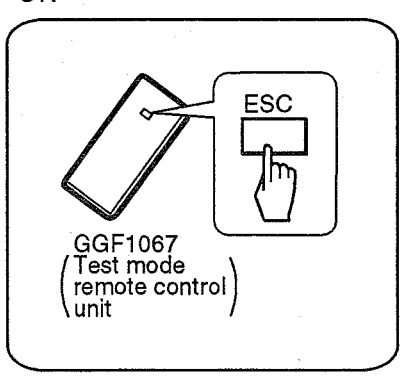
TEST MODE: PLAY



TEST MODE: OFF



OR



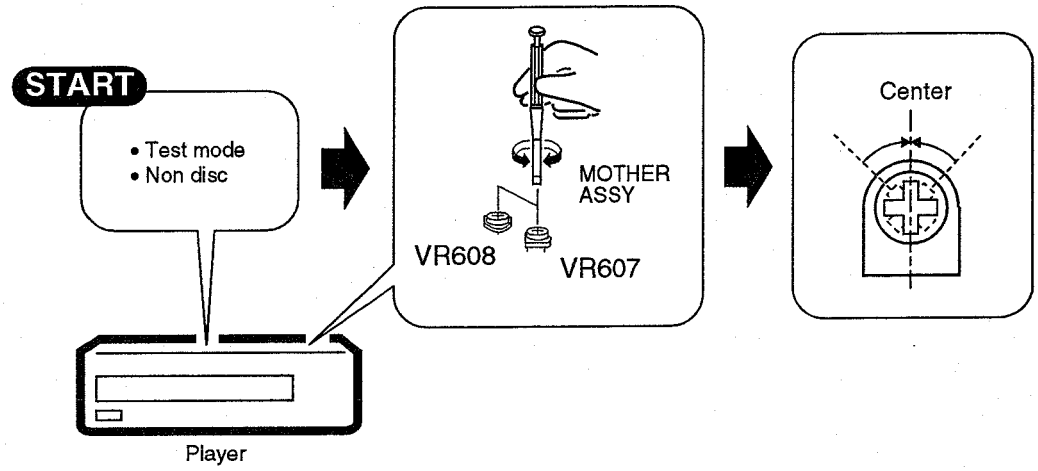
4. NECESSARY ADJUSTMENT POINTS (必要な調整項目)

When (このような時)	Adjustment Points	
■ EXCHANGE MECHANISM ASSY PARTS (メカASSY部品を交換したとき)		
Exchange pickup (ピックアップを交換したとき)	Mechanical point	❶,❷,❸,❹,❺,❻,❼,❽,❾
	Electric point	————
Exchange spindle motor (スピンドルモータを交換したとき)	Mechanical point	❸,❽
	Electric point	————
■ EXCHANGE PCB ASSY (PCB ASSYを交換したとき)		
Exchange board MOTHER ASSY (マザーボードを交換したとき)	Mechanical point	❶,❹,❺,❻,❾
	Electric point	————

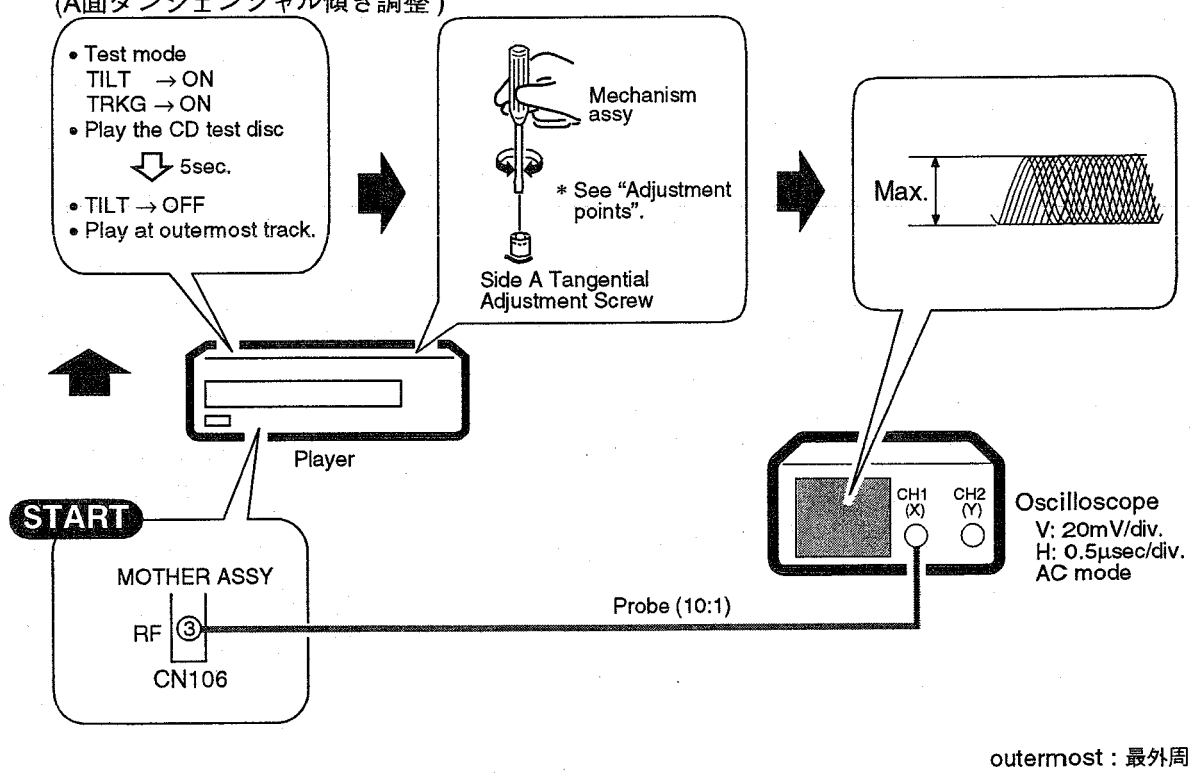
Note : ① and ② are adjusted already. (①,②は調整済)

5. MECHANICAL ADJUSTMENT (機構系の調整)

❶ Tilt Offset Adjustment
(チルトオフセット調整)

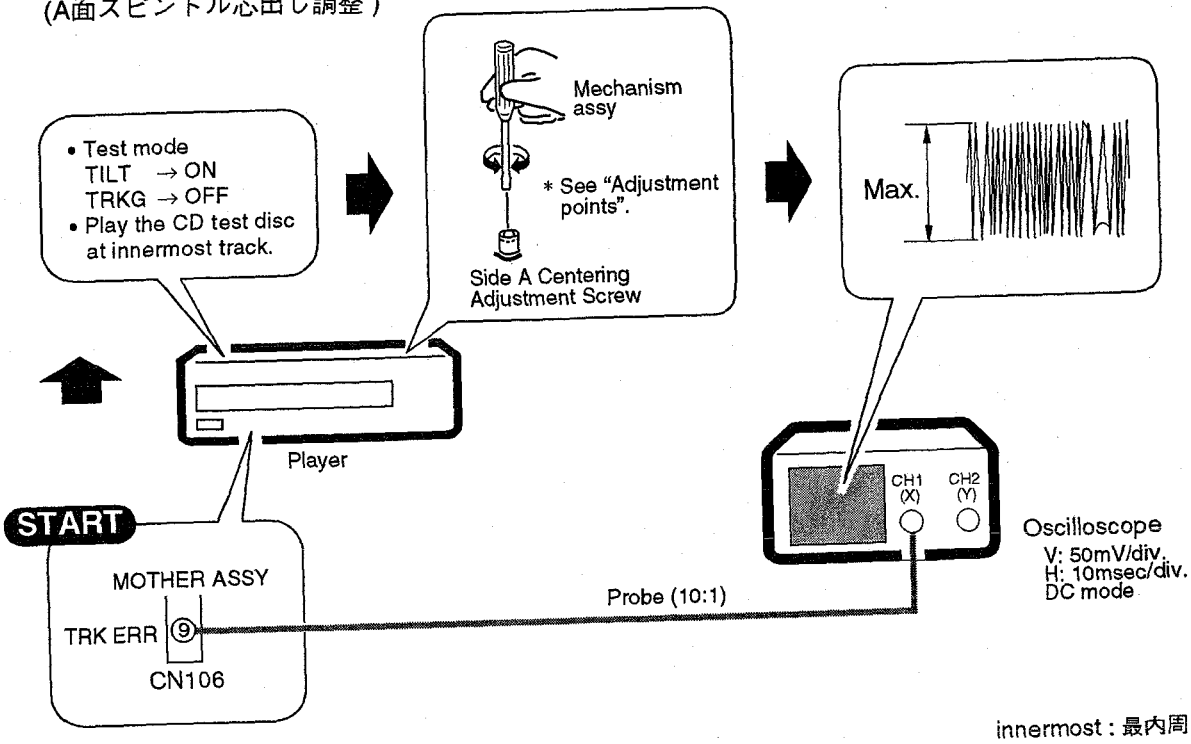


❷ Tangential Direction Angle Adjustment for Side A
(A面タンジェンシャル傾き調整)

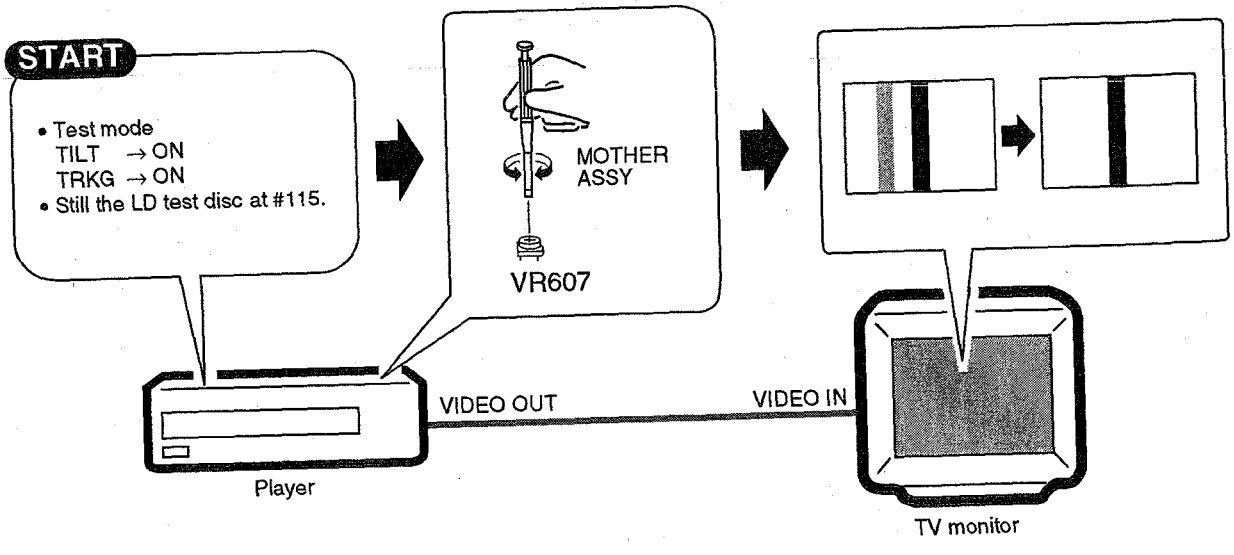


outermost : 最外周

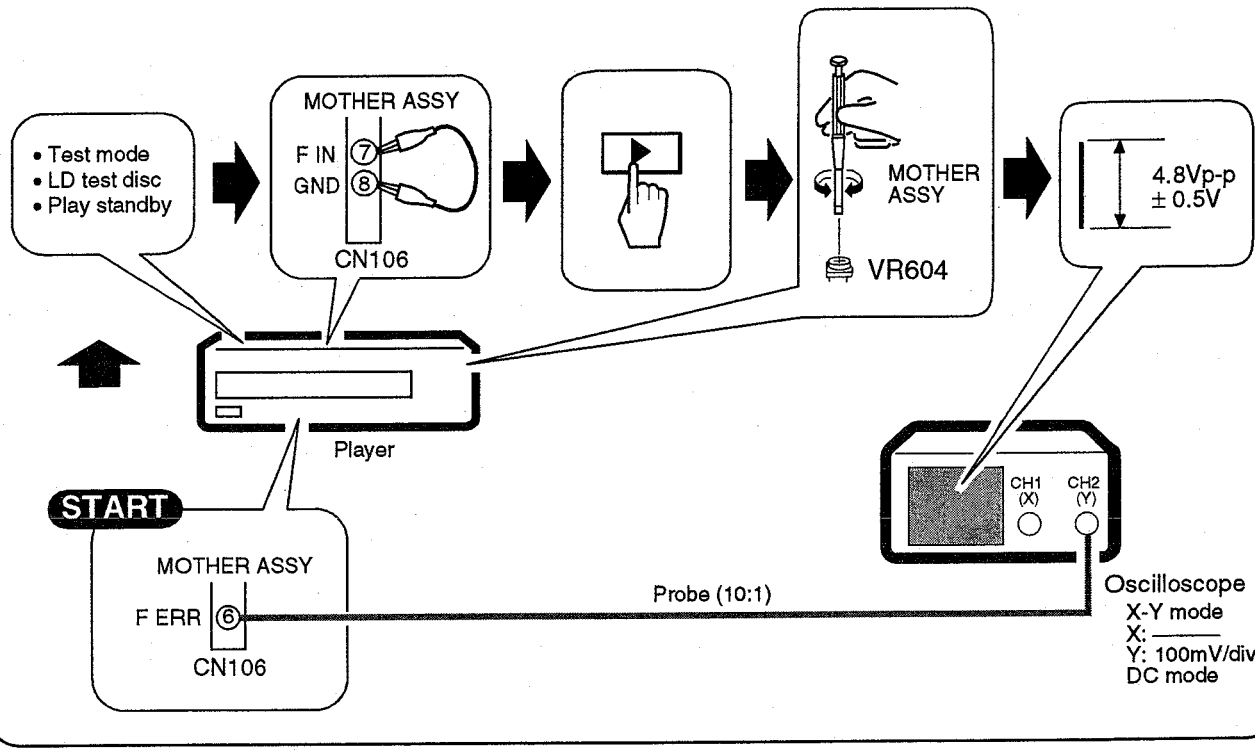
❸ Spindle Motor Centering Adjustment for Side A
(A面スピンドル芯出し調整)



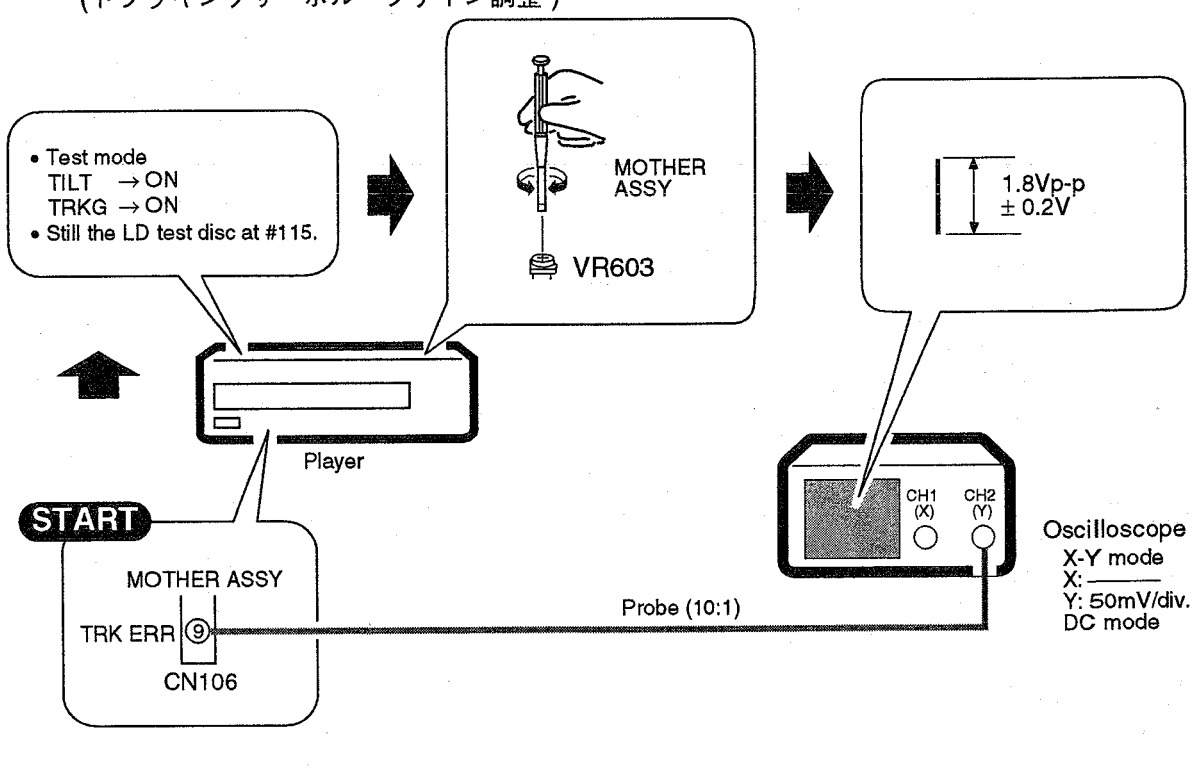
❹ Crosstalk Check and Fine Tilt Offset Adjustment for Side A
(A面クロストーク確認及び，チルトオフセット微調)



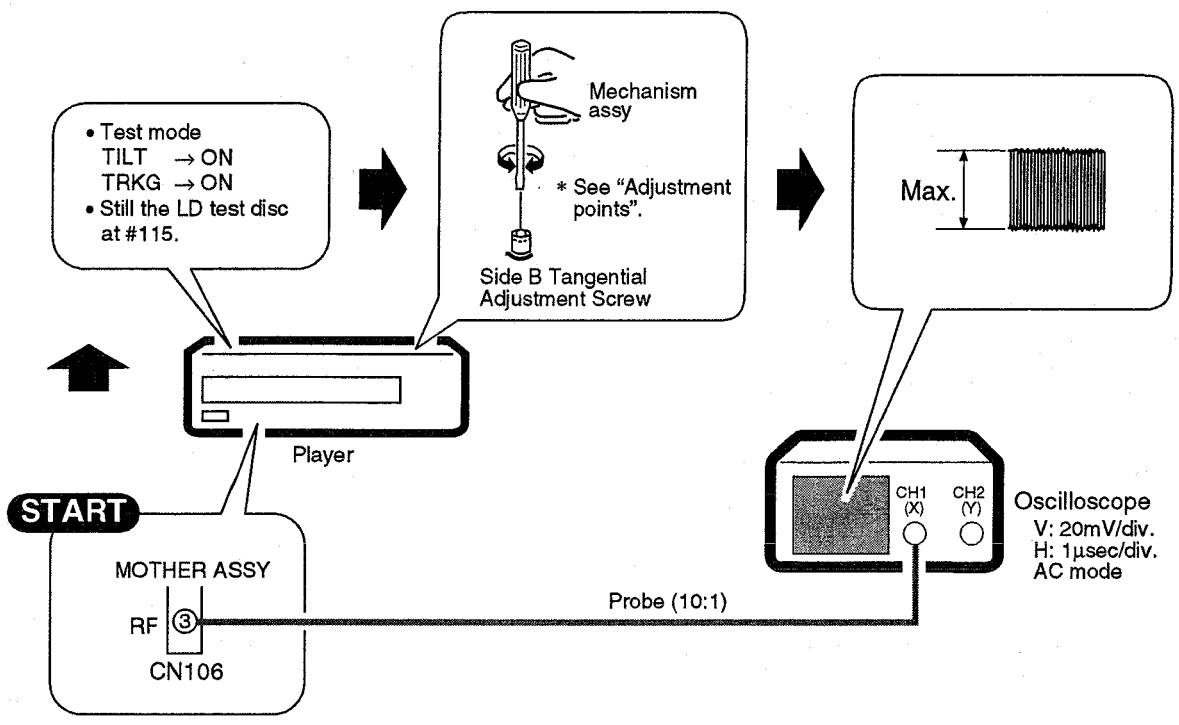
5 Focus Servo Loop Gain Adjustment
(フォーカスサーボループゲイン調整)



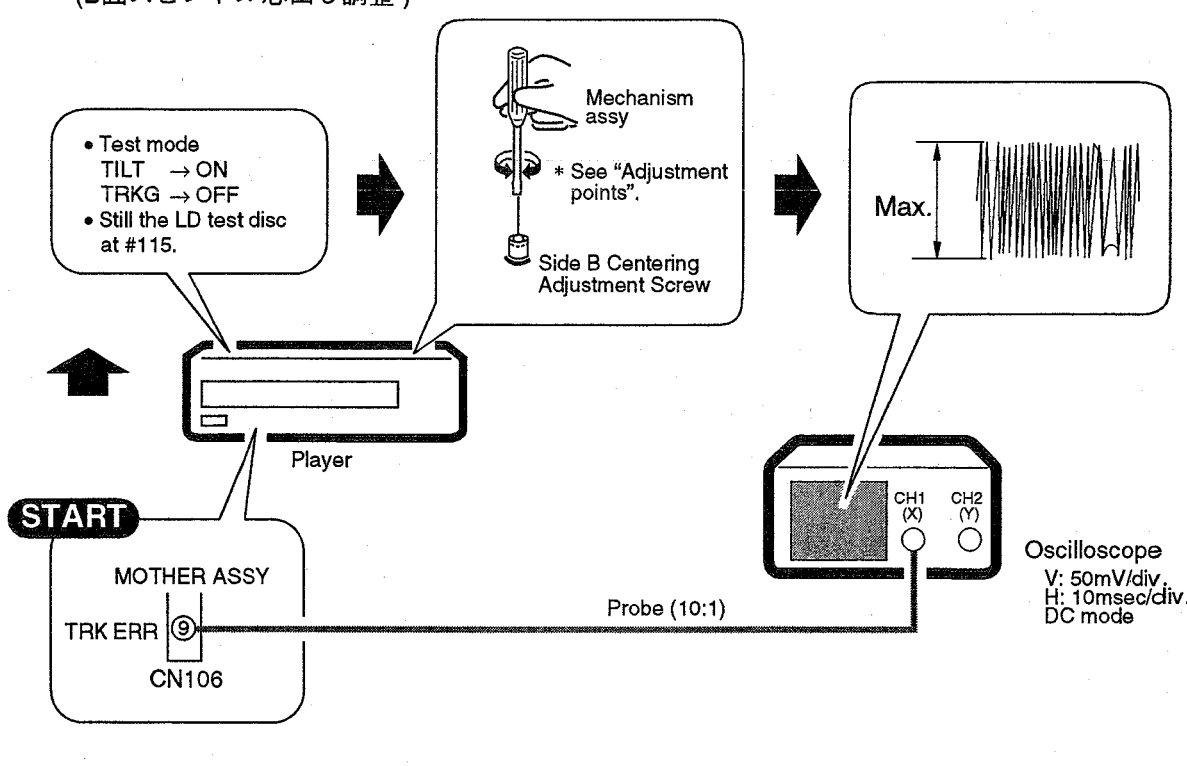
6 Tracking Servo Loop Gain Adjustment
(トラッキングサーボループゲイン調整)



7 Tangential Direction Angle Adjustment for Side B
(B面タンジェンシャル傾き調整)

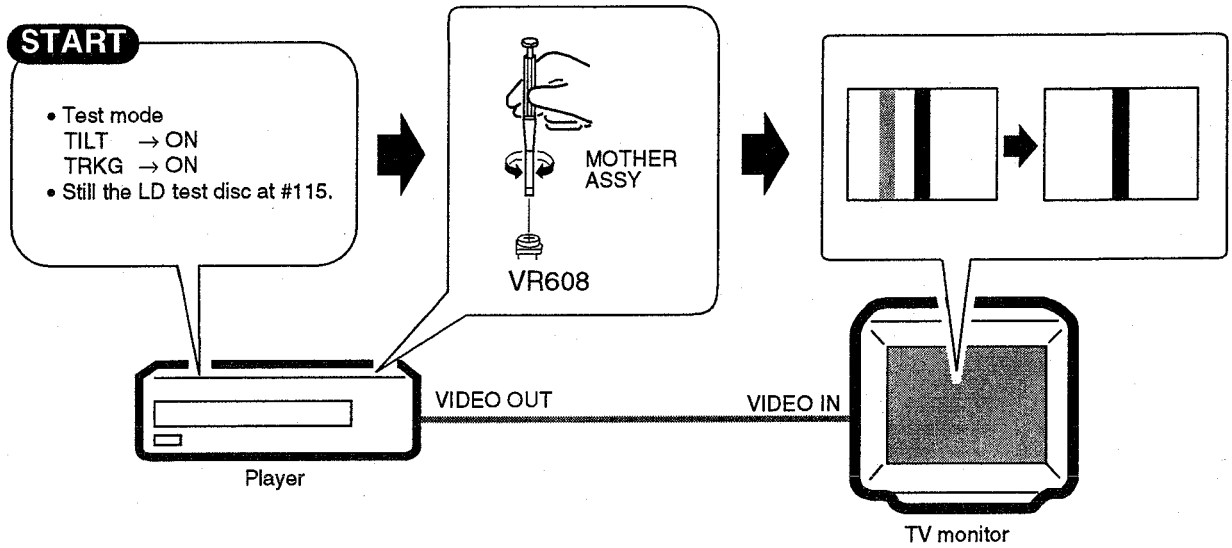


8 Spindle Motor Centering Adjustment for Side B
(B面スピンドル芯出し調整)



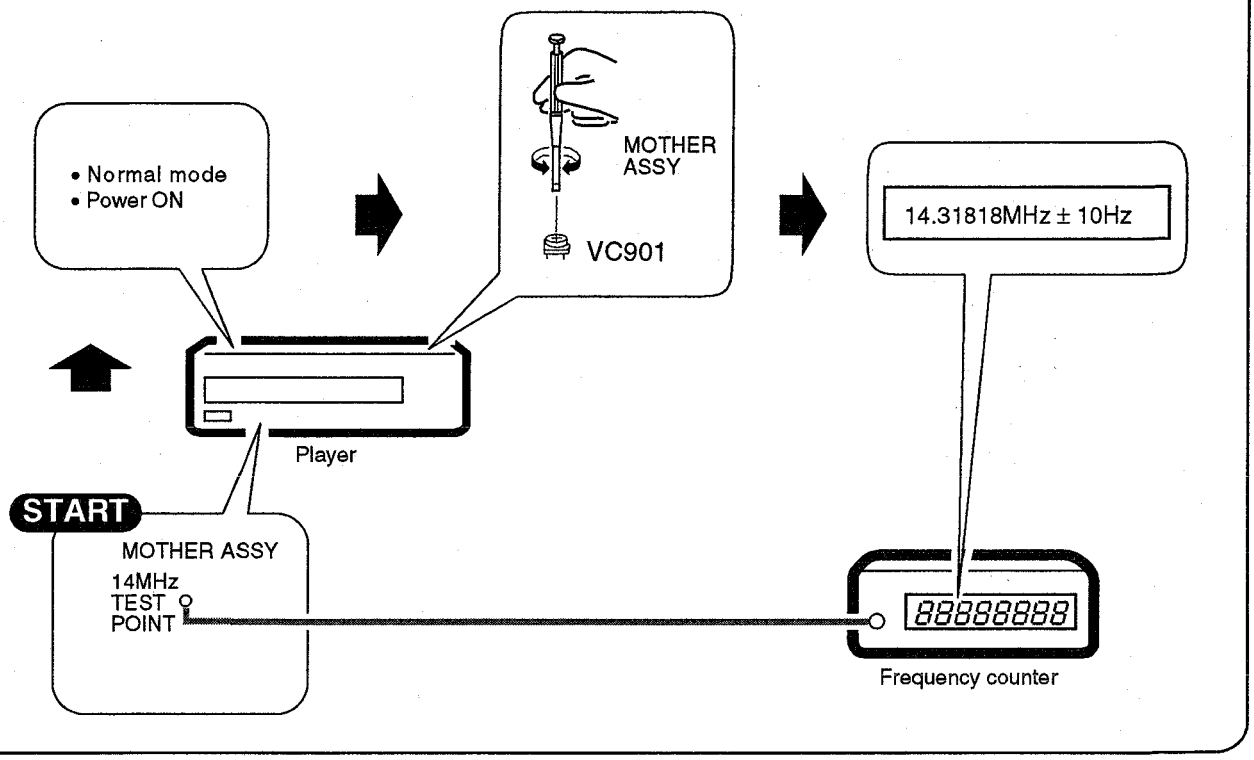
9 Crosstalk Check and Fine Tilt Offset Adjustment for Side B

(B面クロストーク確認及び，チルトオフセット微調)

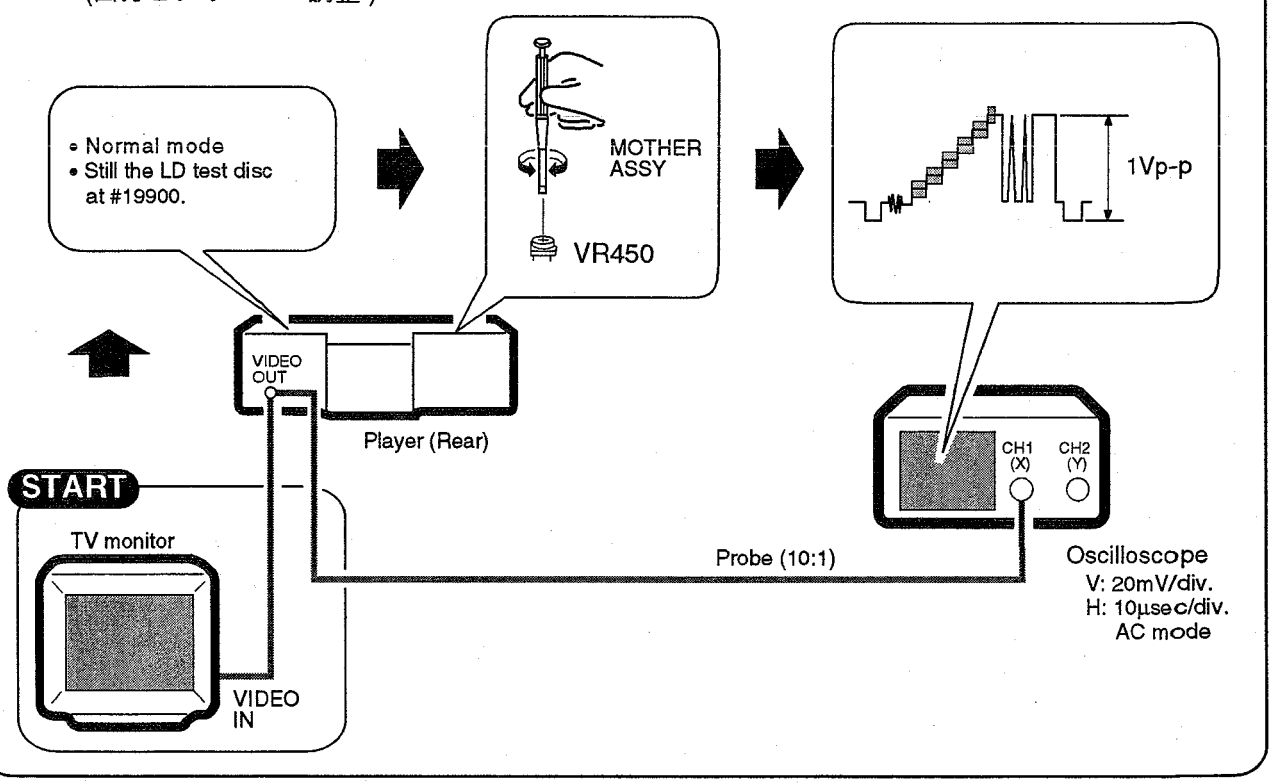


6. ELECTRICAL ADJUSTMENT (電気系の調整)

① Master Clock Adjustment
(マスタークロック調整)

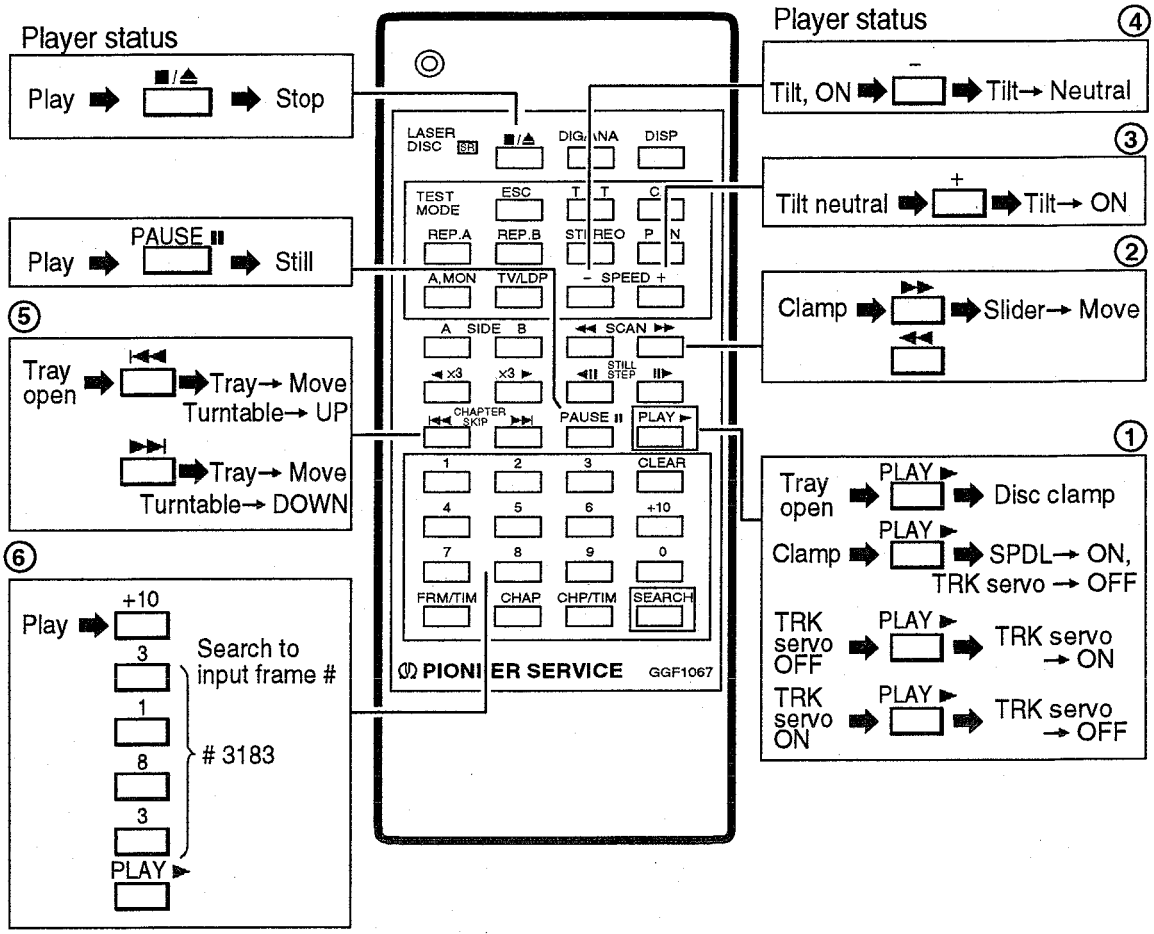


② Output Video Level Adjustment
(出力ビデオレベル調整)

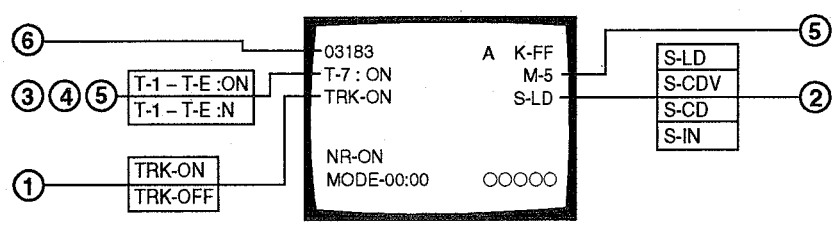


7. OPERATIONS IN THE TEST MODE (テストモード時のサービス用リモコン操作方法)

■ Test Mode Remote Control Unit (GGF1067)



■ TV Monitor Display



6. SELF-DIAGNOSTIC FUNCTIONS

6.1 SELF-DIAGNOSTIC FUNCTIONS

The self-diagnostic functions automatically display an error code on the TV screen and front panel fluorescent display section when there is an error. The customer checks the error code and conveys it to the service personnel to make repairs more efficient.

After an error occurs, even if the error code goes off, you can display the error code again by holding down the CLEAR key for 5 seconds (except a loading error L ∗ display). At that time, partial error is displayed with the mechanism switch information. However, if the power cord is unplugged, the error code information is lost.

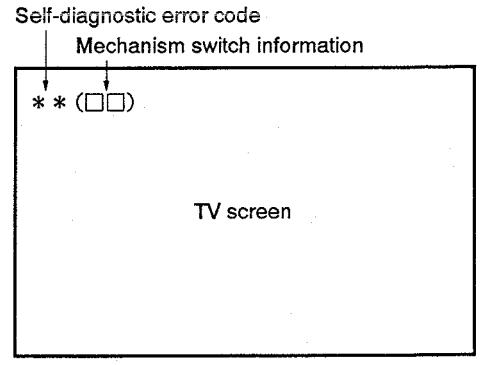


Fig. 1 TV screen display

This table explains the information for analyzing the cause when an error occurs with the CLD player.

Self-diagnostic error code	Contents	Conditions	Probable cause
H0	Spindle overcurrent detection error.	In the play state, overcurrent was detected in the spindle motor. Monitoring starts 5 seconds after the start of play or special playback mode, this error is detected if the overcurrent port is "L" for 4 seconds.	•Motor NG •Clamper rubbing
U0	FG abnormality error	①At LD start-up, the rate of rotation calculated from the FG was less than 15 rpm for 5 consecutive seconds from the spindle run command. ②At CD start-up, there was less than 1/8th rotation even after 5 seconds had passed since the end of acceleration. ③During play search, CD : subcordes are being read/LD : Phillips codes are being read and the spindle is locked, but a state in which the rate of rotation calculated from the FG was less than 15 rpm continued for 5 seconds or more. In the above case, it is judged that an abnormality has occurred in the FG sensor and that accurate rotation rate calculation has become impossible.	•FG sensor abnormality, FG signal not coming to mechanism controller •FG sensor clogged •Rubbing between FG sensor and slit •Turntable dropped •FG slit deposition NG
H1	Partial short error	①At LD start-up, the speed did not reach 1200 rpm within a certain time (12 seconds) after the spindle run command. ②At CD start-up, a certain speed (313 rpm) was not reached within 6 seconds from the end of spindle acceleration.	•Spindle motor NG •Commutator NG •Bearing too tight •Power supply NG
H2 A0	Power supply abnormality error	– 5V power supply abnormality detected. The power supply abnormality port is constantly monitored and if its signal stays high for about 1 second consecutively, the power supply is judged to be abnormal.	• – 5V not fed from POWER SUPPLY assy •Parts shorted
L ∗	Loading error	①When loading operation goes over time (approx. 10 sec.). ②When assist at disc sense entry ends and is not tilt neutral. ③When assist at set up entry ends and is not tilt neutral.	•Tilt switch 1, 2, 3 abnormal, so tilt/loading state not read in correctly •Tilt/loading mechanism mechanically locked •Drive IC NG •Power supply NG
E ∗	Slider error	During slider movement, a time over-run occurred (track count search 20 seconds, mandatory movement 10 seconds)	•Slider ceased being able to run •The slider mechanism is mechanically locked and can no longer move to its target. •Slider position switch NG •Flexible cable pulled out •Drive IC NG •Power supply abnormal
U1	Miss clamp error	①During LD setup, after 1/8th rotation, the track count during 1/8 rotation exeeded 511. ②During start-up, the focus was lost once and refocusting was attempted, but the focus could not be locked. ③Two FG pulses did not come within 800 ms from from the start of LD start-up. ④The disc clamp operation did not end within 5 seconds.	•Disc sandwiched •Disc shifted •Spindle motor NG •Disc scratched or dirty defocused during start-up •Two discs loaded •PU actuator NG •Tilt sensor NG •Tilt neutral NG (tilt base NG)

Self-diagnostic error code	Contents	Conditions	Probable cause
P ∗	Spindle error	①During TOC reading with an LD, the spindle servo was not locked within 60 seconds from the start of the spindle run. ②When CAV/CLV determination is not finished within 60 seconds from spindle servo lock. ③The codes could not be read for 10 – 15 seconds consecutively for an LD or 7 – 10 seconds for a CD/CDV and the spindle servo was not locked. ④The speed exceeded 2100 rpm during LD start up.	P0 :•PH code, SUB-Q code can not be read •VCO, PLL offset out of adjustment •Disc defect P5:•PAL disc, mirror disc, etc. PLAY •No RF P6:•Spindle servo does not lock •Spindle motor NG
F ∗	Focus error	①"In the "no disc" state, a setup command was received from the mode controller. ②When LD is out of focus when slider is moved to starting position during set up. In case of CD/CDV is NG even after three focus tries. ③During start-up, the maximum slider servo duty continued for 3 loops or more.	F5 :•CD, LD on top of each other •LD scratched or dirty defocused during slider movement •Disc NG •Slider position switch NG F6 :•Inner edge of disc scratched or dirty •Slider ran into inner edge mechanical stopper

∗ Besides the above errors, there is the "U2" communications error (the mode controller could not communicate normally with the mechanism controller)
The probable cause is a defective mechanism controller, disconnected cable, etc..
∗ Mechanism mode contents (meanig of ∗ for L ∗ etc.)

0 : Play
1 : Open
2 : Standby
3 : Clamp
4 : Disc sense
5 : Setup (rotation start)
6 : TOC read
7 : Play
8 : Search
9 : Side A → Side B
A : Side B → Side A

6.2 FORMAT OF THE MECHANISM SWITCH INFORMATION WHICH IS TRANSMITTED TO THE MODE CONTROL IN THE ERROR OCCURRENCE

Hexadecimal number system	Binary number system
0	0 0 0 0
1	0 0 0 1
2	0 0 1 0
3	0 0 1 1
4	0 1 0 0
5	0 1 0 1
6	0 1 1 0
7	0 1 1 1
8	1 0 0 0
9	1 0 0 1
A	1 0 1 0
B	1 0 1 1
C	1 1 0 0
D	1 1 0 1
E	1 1 1 0
F	1 1 1 1

• Mechanism switch information (Example [1][7])

Mechanism control → Mode control
Communication byte address 5 (COMBUF5)
(Mode control displays this value as it is.)

Example [1][7] — Hexadecimal number system

Example

Hexadecimal number system: Example [1] Example [7]

Binary number system

bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
0	0	0	1	0	1	1	1
TURN A	O Not used	LTSW1	LTSW2	LTSW3	SLDP1	SLDP2	SLDP3

TURNA	Slider position
0	Side B
1	Side A

Example of [1][7] is indicated as follows.

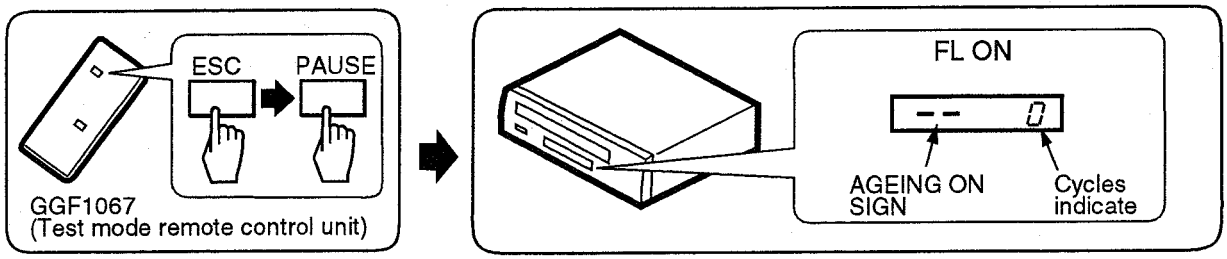
Slider : Side B
Tilt : Tilt +
Position : B-INSIDE

LTSW 1	2	3	Loading/tilt position
0	1	1	Open (Tray open state)
0	0	1	Loading (During move the tray horizontally)
1	0	1	Standby (Tray close & spindle down state)
1	0	0	Clamp (Durring spindle up or down)
0	0	0	Tilt – (Clamp state)
0	1	0	Tilt + (Clamp state)
1	1	0	Tilt limit (Clamp state)

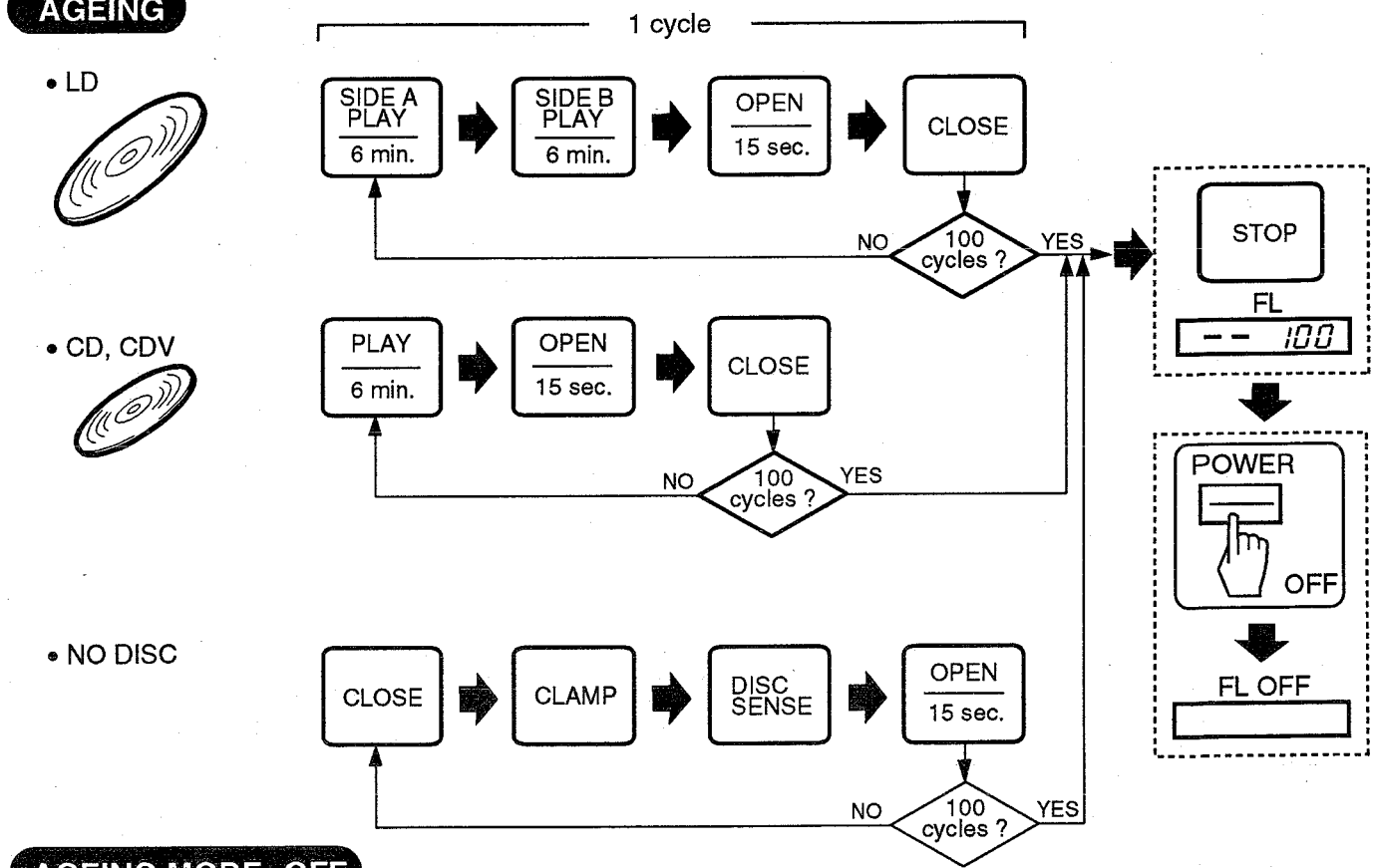
SLDP 1	2	3	Slider position
1	0	0	CD active position
1	0	1	CDV active position
1	1	0	LD active position
0	1	1	CD inside position
1	1	1	Side B inside position

6.3 AGEING MODE (エージングモード)

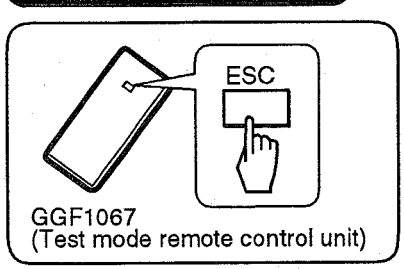
AGEING MODE: ON •Note for KARAOKE model : Set the SINGLE PLAY (一曲停止) mode to OFF.



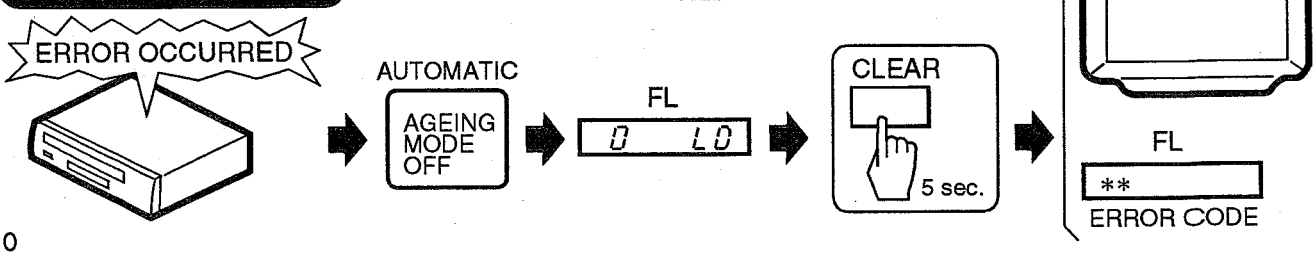
AGEING



AGEING MODE: OFF



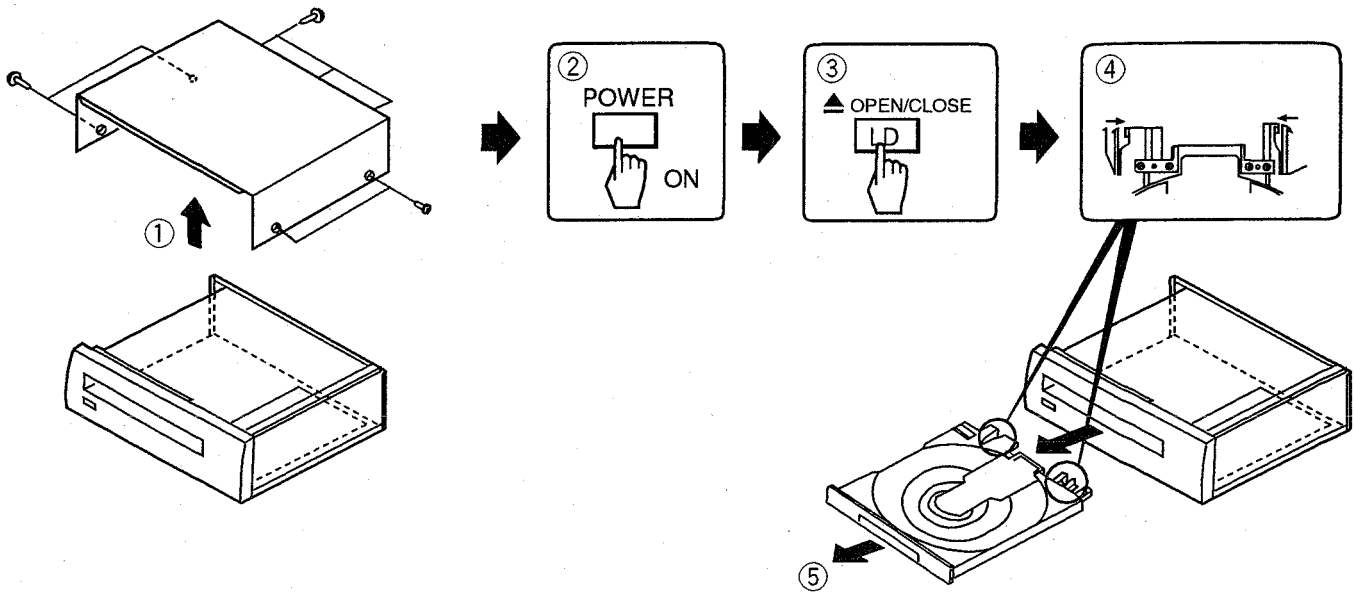
ERROR OCCURRED ERROR OCCURED : エラー発生



7. DISASSEMBLY/ASSEMBLY (分解/組立の手順)

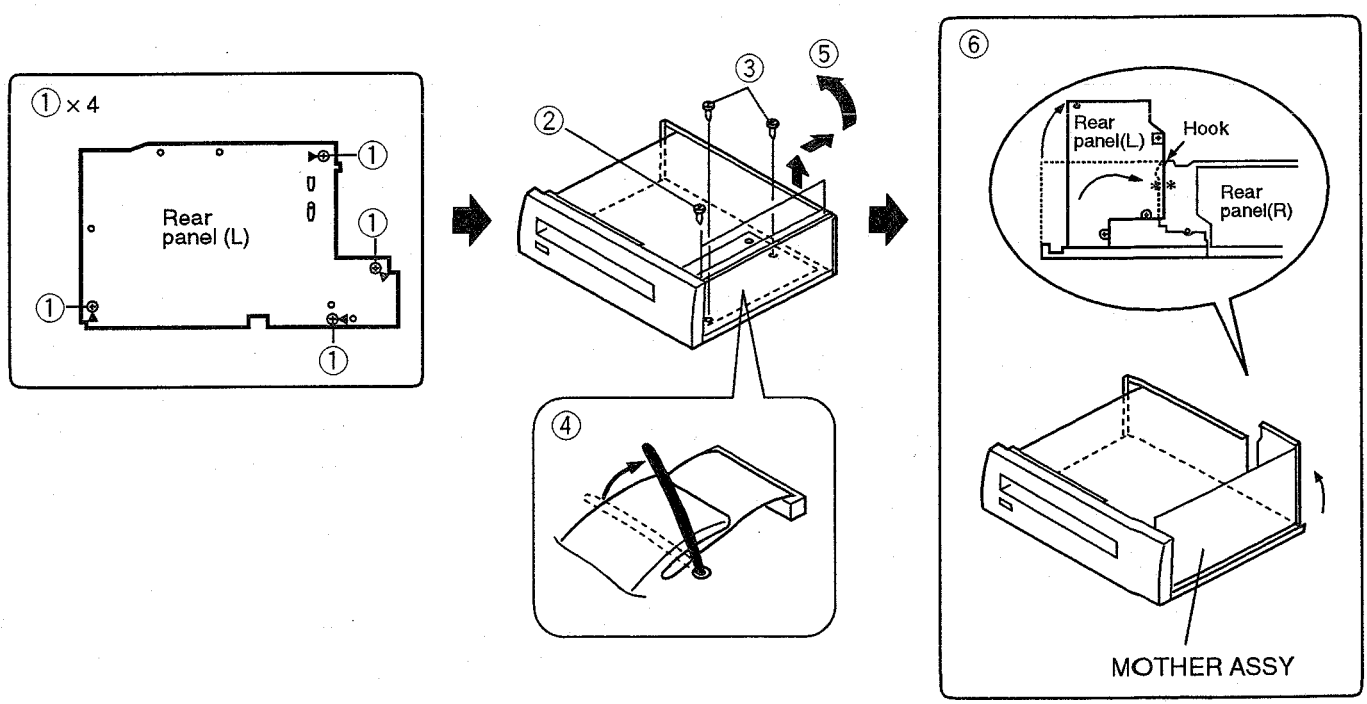
7.1 DISC TRAY

- Disassembly : ①→②→③→④→⑤
- Assembly : ⑤→①



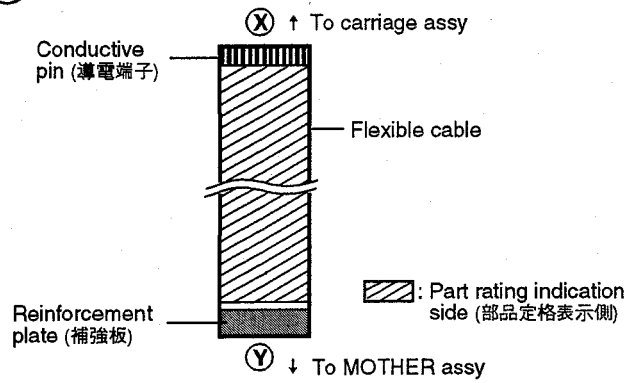
7.2 MOTHER ASSY

- Disassembly : ①→②→③→④→⑤→⑥
- Assembly : ⑥→⑤→④→③→②→①

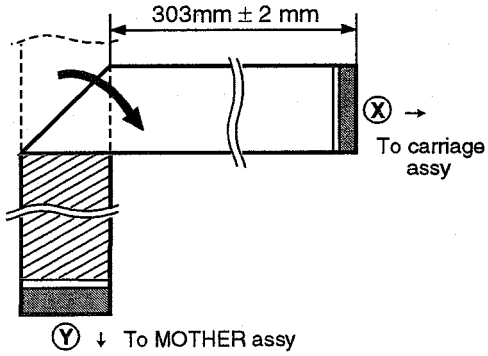


7.3 HOW TO INSTALL THE FLEXIBLE CABLE FOR CARRIAGE ASSY
(キャリッジASSY用フレキシブルケーブルの取付方法)

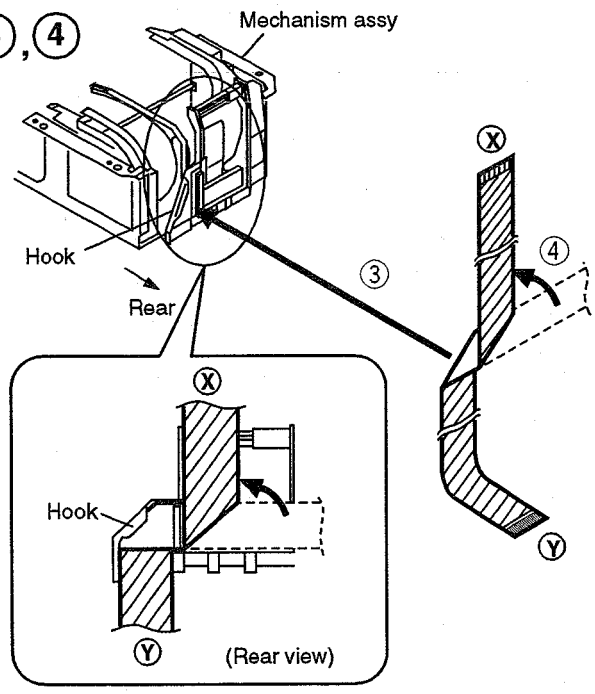
① New Flexible cable



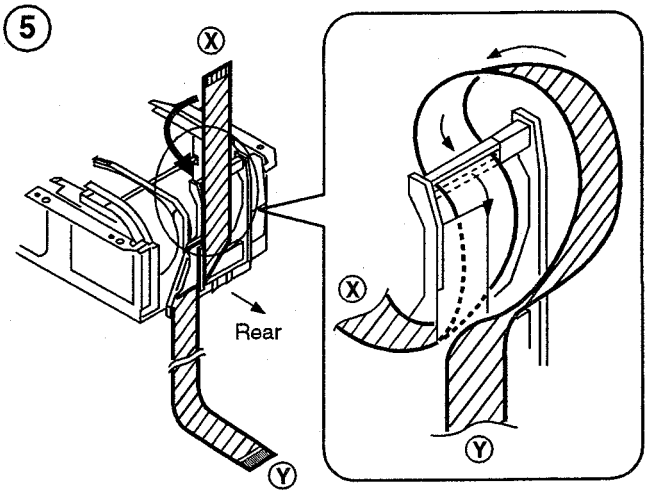
② Bend the Flexible cable
(フレキシブルケーブルを折り曲げる)



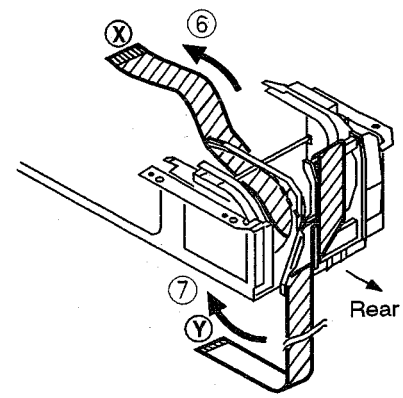
③,④



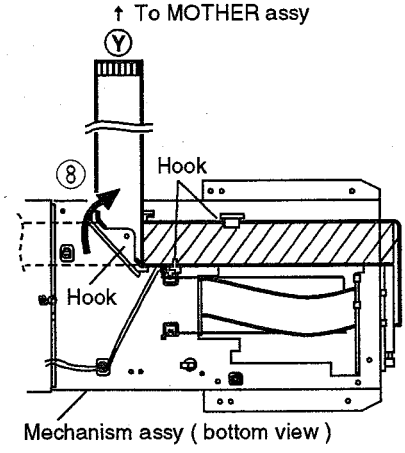
⑤



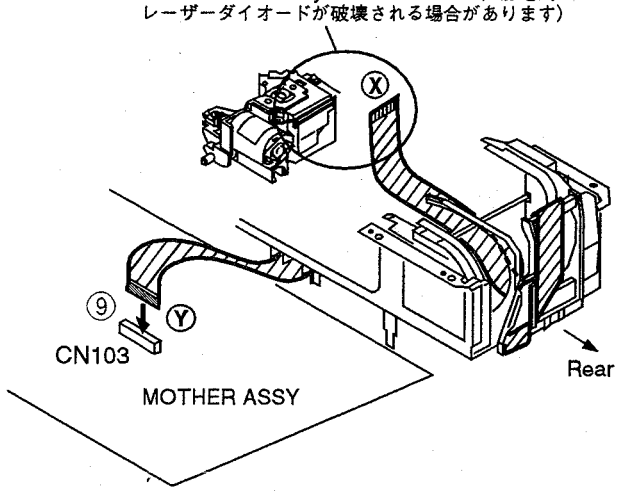
⑥,⑦



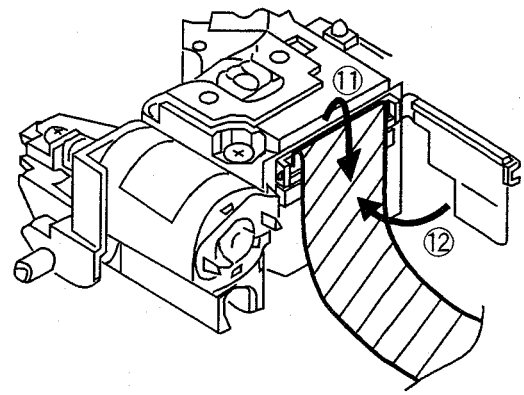
⑧ Turn the mechanism assy upside down
(メカASSYを裏返す)



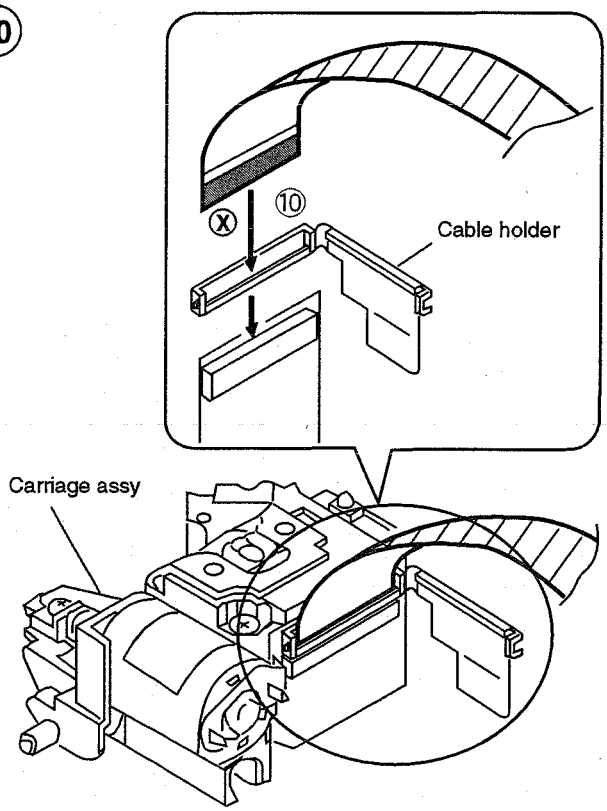
(9) Caution:
Don't connect the Ⓧ side of flexible cable to the carriage assy in this step. (この段階では フレキシブルケーブルのⓍ側をキャッリジASSYへ接続しない)
If connect it, the laser diode might be damaged by the static electricity. (もし接続すると，静電気によりレーザーダイオードが破壊される場合があります)



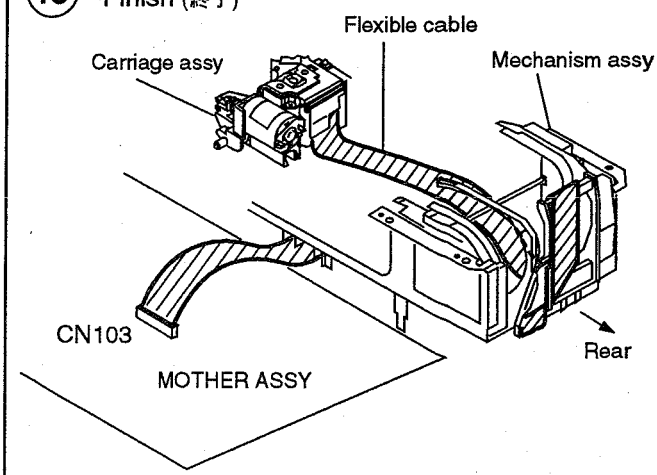
(11), (12)



(10)



(13) Finish (終了)



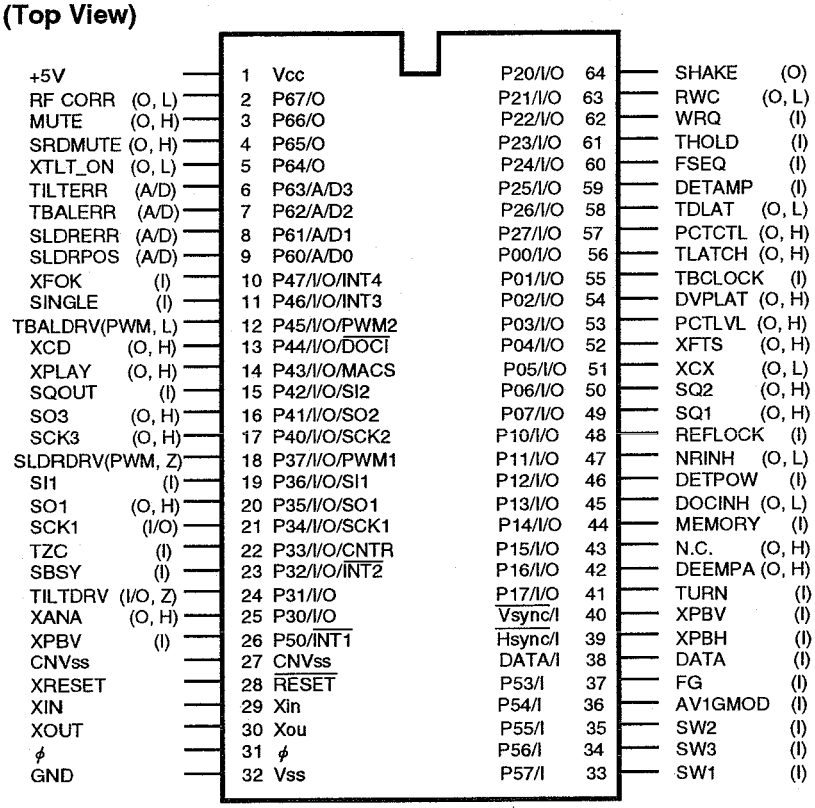
8. IC INFORMATION

•The information in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■PD0240B2 (MOTHER ASSY : IC101)

· MECHANISM CONTROL IC

•Pin Arrangement (Top View)



•Pin Function

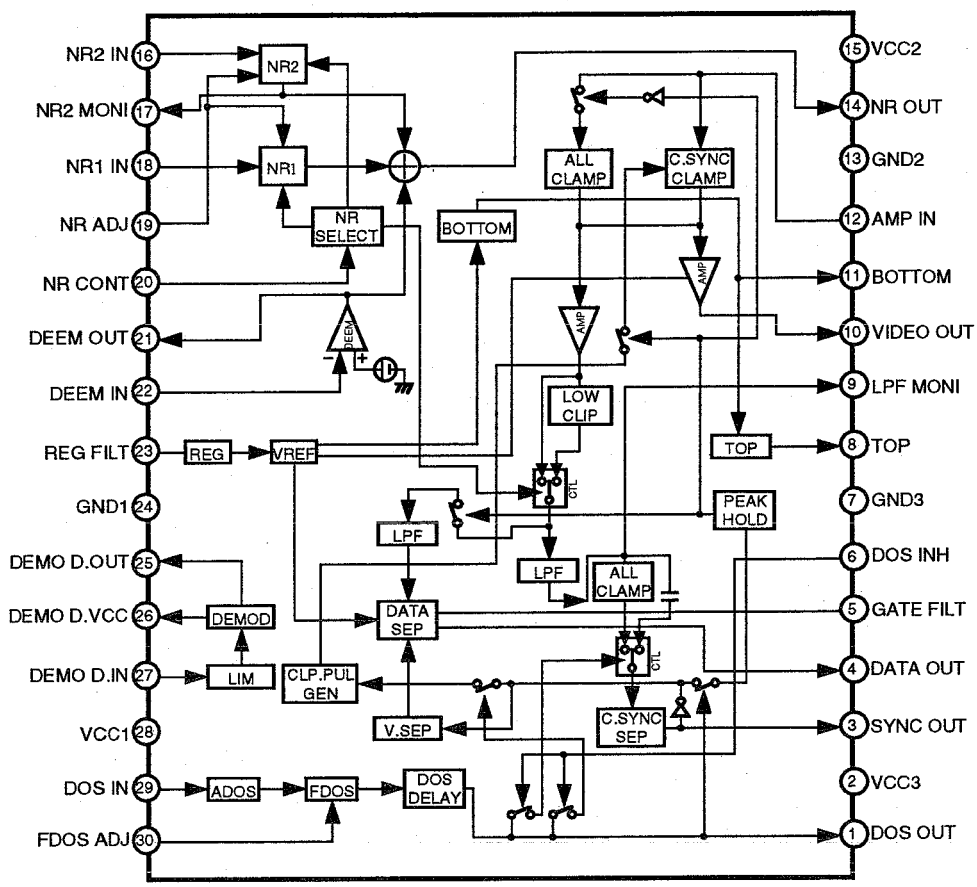
No.	Pin Name	I/O	Function
1	VCC	I	Power supply pin Apply 5V±10%
2	RFCORR	O	RF correction switch signal output H : Gain UP CD, CDV-A : Low, CAV inner circuit gain up, others are High
3	MUTE	O	Audio mute control signal output of audio system L : Release MUTE H : MUTE
4	SRDMUTE	O	Mute control signal output for AC3 Release MUTE during playback. L : Release MUTE H : MUTE
5	XTLT ON	O	Tilt operation information L : During operation In the OPEN/CLOSE, the voltage will up about 10% by using this port.
6	TILTERR	I A/D	This signal is A/D converted as the tilt servo control input. Control the tilt motor so that this signal becomes 2.5V.
7	TBALERR	I A/D	Tracking balance error signal input This signal is A/D converted as the tracking offset control input.
8	SLDERR	I A/D	This signal is A/D converted as the slider servo control input. Control the tilt motor so that this signal becomes 2.5V.
9	SLDPOS	I A/D	Pickup position detection switch input Detect the position by reading A/D input value which each switches are resistance divided.
10	XFOK	I	Focus servo lock signal input L : Lock H : Unlock Use for lock detection of focus servo.
11	SINGLE	I	ATT-SW of rear panel use for the single mode This information transmit to mode control by communication. L : Single H : Normal
12	TBALDRV	O PWM	Output the tracking offset signal to PWM output, then use for auto tracking offset. 910 μsec period, tri-state control H, L, Z
13	XCD	O	LD/CD switch signal output L : CD H : LD
14	XPLAY	O	Signal output during spindle servo L : During servo H : During acceleration, brake and stop
15	SQOUT	I	Command data input from DSP Read out SUBQ
16	SO3	O	Serial 3 data signals output Serial signals are common used and signal distinguishes from the latch signals (DVPLAT and TLAT).
17	SCK3	O	Serial 3 clock signals output
18	SLDDRV	O PWM	Slider control signal output 5V=FWD, 0V=REV, 2.5V=STOP 910 μsec period, tri-state control H, L, Z

No.	Pin Name	I/O	Function
19	SI1	I	Data input from the mode control IC
20	SQ1	O	Serial data output to the mode control IC
21	SCK1	I/O	Clock for serial communication with the mode control IC Becomes input mode without communicate with the mode control IC
22	TZC	I INT	Tracking error zero cross signal input Monitor this signal when searching track count in the miss clamp detection.
23	SBSY	I	Interrupt input for reading sub-code from DSP
24	TILTDRV	I/O	LOAD/TILT control output 0.5V-Tray IN, OUT/Tilt DOWN, UP 2.5V-STOP Use for tilt servo that tilt drive is PWM output.
25	XANA	O	Digital/Analog audio switch signal output L : Analog H : Digital
26	XPBV	I	Playback vertical sync. signal input of LD/CDV L : During vertical sync.
27	CNVss	I	Ground for A/D conversion
28	XRESET	I	Reset signal input L : Reset H : Release reset Mode control is controlled.
29	XIN	I	9MHz clock oscillation input
30	XOUT	O	9MHz clock oscillation output
31	N.C.	O	Not used
32	GND	I	Ground
33	SW1	I	Switch input for Loading/Tilt position detection
34	SW2		
35	SW3		
36	AV1GMOD	I	AV1 gijutu mode When this port set to H, unti-shock control will be effective by Address C-bit2 from the mode control.
37	FG	I	Spindle motor FG signal input 16 outputs per rotation Used after dividing by 2 in microprocessor
38	DATA	I	Input pin for Phillips code decoder with built in mechanism controller
39	XPBH	I	Playback H-SYNC input for Phillips code decoder
40	XPBV	I	Playback V-SYNC input for Phillips code decoder
41	TURN	I	Turn switch input H : side A L : side B
42	DEEMPA	O	DSP deemphasis control L : OFF H : ON
43	N.C.	O	Not used
44	MEMORY	I	Memory model discrimination H : Memory model L : Non-memory model
45	DOCINH	O	Control the clamp pulse and clamp killer by tri-state value
46	DETPOW	I	Use for power abnormal signal input port. L : Normal H : Abnormal
47	NRINH	O	Control output of the noise reduction switch signal output L : NR ON H : NR OFF
48	REFLOCK	I	Reference signal input from DVP L : Phase not aligned H : Phase aligned (Non-memory)
49	SQ1	O	Analog audio switch signal output 1/L L : Squelch OFF H : Squelch ON
50	SQ2	O	Analog audio switch signal output 2/R L : Squelch OFF H : Squelch ON
51	XCX	O	Analog audio CX noise reduction switch switch signal output L : CX ON H : CX OFF
52	XFTS	O	Serial command output switch signal output of DSP/others L : DSP H : others
53	PCTLVL	O	Signal output for the picture quality adjustment L : SHARP2 (strong) H : SHARP1 (weak)
54	DVPLAT	O	PD0234A serial latch signal output Latches at falling edge.
55	TBCLOCK	I	Spindle lock signal input L : Unlock H : Lock
56	TLATCH	O	DAC & digital filter PD2026B serial control latch signal output Latches at falling edge.
57	PCTCTL	O	Outline correction signal output L : Correction OFF H : Correction ON
58	TDLAT	O	Latch signal for three-dimensional IC control Latches at falling edge.
59	DETAMP	I	Spindle over-current detection signal input L : Over current H : Normal
60	FSEQ	I	Subcode sync. conformity detection signal input L : Not conformity H : Conformity
61	THOLD	I	Track jump accelerating / decelerating signal input L : other H : accelerating / decelerating
62	WRQ	I	Subcode Q reading OK signal input L : NG H : OK This pin will be H when Subcode Q data passed by CRC check.
63	RWC	O	DSP read / write command signal output L : Read H : Write
64	SHAKE	I/O	Handshake signal for data communication with the mode control IC This pin is the bilateral data line and each microprocessor control the Input / Output.

■LA7134M (MOTHER ASSY : IC400)

・ VIDEO IC

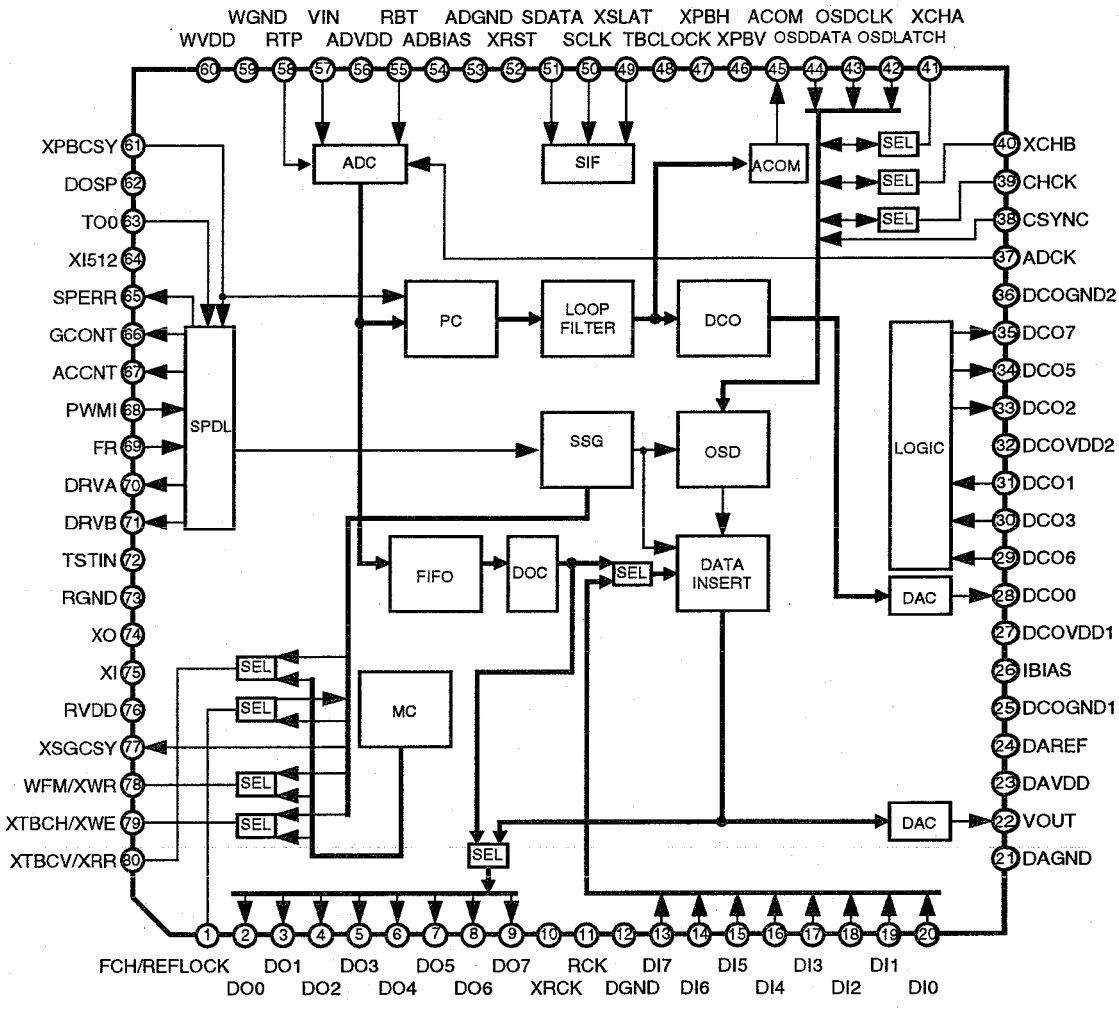
•Block Diagram



■PD0234A (MOTHER ASSY : IC500)

· DVP

•Block Diagram



•Pin Function

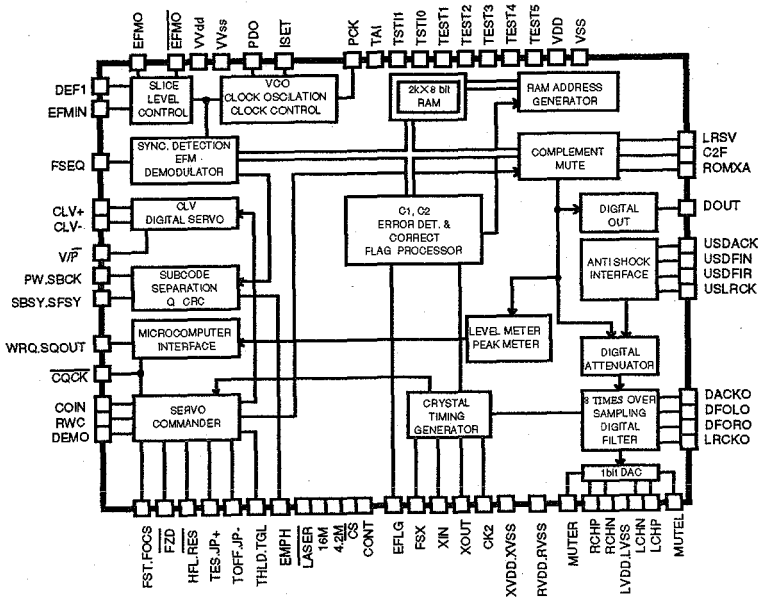
No.	Pin Name	I/O	Function	
1	FCH	I	MEMSYS:1	Switch the field of SSG by "H"
	REFLOCK	O	MEMSYS:0	Outputs "H" when the phase difference of H/V sync. signal associated with the time-base-corrected video signal and those associated with SSG is small enough.
2	DO0	O	Outputs the digital data of the time-base-corrected video signal for the memory system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), output for field memory and external output are common used. Perform the data output setting with the serial command. DO7 : MSB , DO0 : LSB	
3	DO1			
4	DO2			
5	DO3			
6	DO4			
7	DO5			
8	DO6			
9	DO7			
10	XRCK	O	Inverting outputs the CLK of the reading system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), phase is able to control with the serial command.	
11	RCK	O	Outputs the CLK of the reading system. When using the internal memory controller (MEMSYS:1 & EXTMC:0), phase is able to control with the serial command.	
12	DGND	—	Ground of digital system Connect to GND.	
13	DI7	I	Digital video signal input Outputs the field memory when using the internal memory controller (MEMSYS:1 & EXTMC:0) and inputs the external signal when using the external A/D. DI7 : MSB , DI0 : LSB	
14	DI6			
15	DI5			
16	DI4			
17	DI3			
18	DI2			
19	DI1			
20	DI0			
21	DAGND	—	Ground for DAC Connect to GND.	
22	VOUT	O	DAC output of the time-base-corrected video signal	
23	DAVDD	—	Power supply for DAC Connect to GND.	
24	DAREF	—	Reference pin for DAC Normally, decoupling to the DAGND through the 0.1 μF laminated ceramic capacitor.	
25	DCOGND1	—	Ground for DCO Connect to GND.	
26	IBIAS	—	Current setting pin of the bias circuit Normally, connect to DAGND through the 10kΩ resistor.	
27	DCOVDD1	—	Power supply for DCO Connect to +5V.	
28	DCO0	O	DCO output pin Outputs a fsc in synchronization with the input video signal. This signal is multiplied by 4 to produce CLK of writing system.	
29	DCO6	I	Waveform shaping input pin 6 Inputs a signal obtained by delaying the DCO5 output signal by 35 ns. (to be self biased)	
30	DCO3	I	Waveform shaping input pin 3 Inputs a signal obtained by delaying the DCO5 output signal by 70 ns. (to be self biased)	
31	DCO1	I	Waveform shaping input pin 1 Inputs a DCO0 output signal via the fsc BPF. (to be self biased)	
32	DCOVDD2	—	Power supply for output multiplied by 4 Connect to +5V.	
33	DCO2	O	Waveform shaping input pin 2 Outputs a signal obtained through waveform shaping of the DCO0 output signal.	
34	DCO5	O	Waveform shaping input pin 5 Outputs a signal multiplied by 2.	
35	DCO7	O	Waveform shaping input pin 7 Outputs a signal multiplied by 4.	
36	DCOGND2	—	Ground for output multiplied by 4 Connect to GND.	
37	ADCK	I	CLK input for writing system Inputs DCO7 output signal via a 4fsc BPF. (to be self biased)	
38	CSYNC	I	Composite sync. input for character generator When using the OSD for single (EXTMIX:1), input the composite sync. for generating the character.	
39	CHCK	I	EXTMIX :1	CLK input for character generator Inputs 2fsc.
	CHCK	O	EXTMIX :0	CLK output for character generator Outputs 2fsc.
40	XCHB	O	EXTMIX :1	Blanking signal output
	XCHB	I	EXTMIX :0	Blanking signal input Inputs "L" when inserting the blanking signal.
41	XCHA	O	EXTMIX :1	Character signal output
	XCHA	I	EXTMIX :0	Character signal input Inputs "L" when inserting the character signal.
42	OSDLATCH	I	Latch input for OSD Serial transmission of the OSD control data is able to accept by this pin set to "L".	
43	OSDCLK	I	CLK input for reading the OSD data	

No.	Pin Name	I/O	Function	
44	OSDDATA	I	Control data input for OSD Read the data in synchronization with CLK which input to OSDCLK pin.	
45	ACOM	O	Jitter correction signal output for analog audio Use for cancelling the jitter element of analog audio.	
46	XPBV	O	PB system V sync. output Outputs the signal obtained by separating V sync. signal from the signal at pin 61 (XPBCSY) with negative logic.	
47	XPBH	O	PB system H sync. output Outputs the signal obtained by separating H sync. signal from the signal at pin 61 (XPBCSY) with negative logic.	
48	TBCLOCK	O	PLL lock detection signal output Outputs "H" when the spindle loop and the TBC loop are locked.	
49	XSLAT	I	Serial interface latch input Gives the latch timing for data applied to the serial interface. Latches at "L".	
50	SCLK	I	CLK input for the serial interface SDATA value will be read at the rising edge.	
51	SDATA	I	Data input pin for the serial interface	
52	XRST	I	System reset input Input for initializing the internal register of IC with negative logic.	
53	ADGND	—	Ground for ADC Connect to GND.	
54	ADBIAS	—	*NC or connect to ADGND.*	
55	RBT	I	ADC bottom reference input Gives the bottom reference voltage of ADC.	
56	ADVDD	—	Power supply for ADC Connect to +5V.	
57	VIN	I	ADC input Inputs the composite video signal.	
58	RTP	I	ADC top reference input Gives the top reference voltage of ADC.	
59	WGND	—	Ground for writing system Connect to GND.	
60	WVDD	—	Power supply for writing system Connect to +5V.	
61	XPBCSY	I	*Inputs the composite sync. signal of PB system with negative logic.*	
62	DOSP	I	Inputs the dropout detection pulse with positive logic.	
63	TO0	I	Inputs the tracking-servo open signal with positive logic.	
64	XI512	O	Outputs a 1/512th division of the CLK of reading system.	
65	SPERR	O	PFD error output of the spindle error It outputs the result of comparison (PFD) between PBH and reading system H in tristate.	
66	GCONT	O	Spindle gain control output Outputs a PWM signal according to the serial-command specified value.	
67	ACCNT	O	Acceleration control output Tristate output of the acceleration/deceleration signal, which depends either on the forced acceleration/deceleration signal, the error detection by serial command or error detection by H sync. signal.	
68	PWMI	I	Spindle error PWM input Inputs a signal obtained through the voltage comparison between the spindle error signal which has passed through a loop filter and the chopping wave.	
69	FR	I	Spindle error direction element input Inputs a signal obtained through the voltage comparison between the spindle error which has passed through a loop filter and the destination voltage.	
70	DRVA	O	*Output for driving the spindle motor driver* It is applicable to either a brush or brushless motor, selection of which is by a serial command.	
71	DRVB			
72	TSTIN	I	Input for IC test Fixed to "L".	
73	RGND	—	Ground for reference system Connect to GND.	
74	XO	O	Connect the X'tal. Connect the 8fsc when using the internal memory controller (MEMSYS:1 & EXTMC:0) and the 4fsc is at others.	
75	XI	I		
76	RVDD	—	Power supply for reference system Connect to +5V.	
77	XSGCSY	O	Internal SSG composite sync. output Outputs the composite sync. signal of the internal SSG with negative logic. It can be delayed by a serial command with a specified delay duration.	
78	WFM	O	MEMSYS:1 & EXTMC:1	Field monitor output of write system Outputs "H" for the odd field.
	XWR	O	MEMSYS:1 & EXTMC:0	Write reset output Outputs a signal to initializing the writing address of field memory. Outputs "L" pulse for 1CLK on every field of write system. Connect to XWRST input of field memory.
79	XTBCH	O	MEMSYS:1 & EXTMC:1	TBC H sync. output Outputs the time-base-corrected H sync. signal with negative logic.
	XWE	O	MEMSYS:1 & EXTMC:0	Write enable output Control the writing operation of field memory. "L" for enable and "H" for disenable. Connect to XWE input of field memory.
80	XTBCV	O	MEMSYS:1 & EXTMC:1	*TBC V sync output Outputs the time-base-correcter V sync. signal with negative logic.*
	XRR	O	MEMSYS:1 & EXTMC:0	Read reset output Outputs a signal to initializing the reading address of field memory. Outputs "L" pulse for 1CLK on every each field of read system. Connect to XRRST input of field memory.

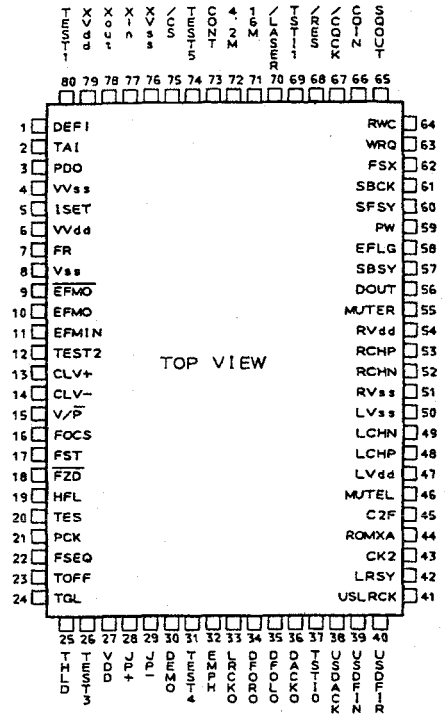
■LC78621E (MOTHER ASSY : IC802)

· SERVO CONTROLER & EFM DEMODULATOR

•Block Diagram



•Pin Arrangement (Top View)



•Pin Function

No.	Pin Name	I/O	Function	
1	DE-FI	I	Defect detection signal (DEF) input pin ("L" at not used)	
2	TAI	I	For PLL	Test input pin with pull-down resistor
3	PDO	O		Phase comparison output for controlling the external VCO
4	V Vss	—		Power supply for PLL and internal VCO Normally, 0V.
5	ISET	AI		Connect a resistor for current adjustment of PDO output
6	V VDD	—		Ground for internal VOO Normally, 5V.
7	FR	AI		For VCO frequency range adjustment
8	Vss	—	Ground for digital system Normally, 0V.	
9	EFMO	O	For slice level control	EFM signal inversion output
10	EFMO	O		EFM signal output
11	EFMIN	I		EFM signal input
12	TEST2	I	Test input pin with pull-down resistor	
13	CLV+	O	Output pin for controlling the spindle servo Acceleration for CLV+ is "H" and Deceleration for CLV- is "H".	
14	CLV-	O	Tristate output is able to output with command	
15	V/P	O	Automatic switching monitor output of rough servo/phase control H : Rough servo , L : Phase control mode	
16	FOCS	O	Output pin for focus servo ON/OFF Focus servo ON for "L"	
17	FST	O	Focus start pulse output (open drain output)	
18	F2D	I	Focus error zerocross signal input ("L" at not used)	
19	HFL	I	Track detection signal input (schmitt input)	
20	TES	I	Tracking error signal input (schmitt input)	
21	PCK	O	Clock monitor output for EFM data playback (4.3218MHz at phase clock)	
22	FSEQ	O	Sync. signal detection output Becomes "H" when the sync. signals between the detected sync. signal from EFM signal and internal generated sync. signal are aligned.	
23	TOFF	O	Tracking OFF output	
24	TGL	O	Output pin for output tracking gain switch Gain up for "L".	
25	THLD	O	Tracking hold output	
26	TEST3	I	Test input pin with pull-down resistor	

No.	Pin Name	I/O	Function
27	VDD		Power supply for digital system Normally, 5V.
28	JP+	O	Output pin for track jump When JP+ is "H" , Acceleration in the outer direction jump or Deceleration in the inner direction jump. When JP- is "H" : Acceleration in the inner direction jump or deceleration in the outer direction jump. Tristate output is able to output with the bcommand.
29	JP-		
30	DEMO	I	Sound output function input for the player adjustment with pull-down resistor
31	TEST4	I	Test input pin with pull-down resistor
32	EMPH	O	Deemphasis monitor output H : during playback the deenphasis disc
33	LRCKO	O	Digital filter output — Word clock output
34	DFORO		Digital filter output — R ch data output
35	DFOLO		Digital filter output — L ch data output
36	DACKO		Digital filter output — Bit clock output
37	TST10	O	Test output pin Open (Normally, output "L")
38	USDACK	I	Antishock correspondence input ("L" at not used) — Bit clock input
39	USDFIN		Antishock correspondence input ("L" at not used) — L ch and R ch data
40	USDFIR		Antishock correspondence input ("L" at not used) — Test input pin Normally, "L".
41	USLRCK	I	Antishock correspondence Input word clock input ("L" at not used)
42	LRSY	O	ROMXA correspondence output — L/R clock output
43	CK2		ROMXA correspondence output — Bit clock output / DACLK (at RES) / Polarity inversion (CK2COK mode)
44	ROMXA		ROMXA correspondence output — Data output / Data (complement) (at RES) / ROMOUT (ROMXA mode)
45	C2F		ROMXA correspondence output — C2 flag output
46	MUTEL	O	For1bit DAC — Mute output
47	L VDD		For1bit DAC — Power supply for L ch Normally, 5V.
48	LCHP	O	For1bit DAC — L ch P output
49	LCHN	O	For1bit DAC — L ch N output
50	LVSS		For1bit DAC — Ground for L ch Normally, 0V.
51	RVSS		For1bit DAC — Ground for R ch Normally, 0V.
52	RCHN	O	For1bit DAC — R ch N output
53	RCHP	O	For1bit DAC — R ch P output
54	RVDD		For1bit DAC — Power supply for R ch Normally, 5V.
55	MUTER	O	For1bit DAC — Mute output
56	DOUT	O	Digital OUT output
57	SBSY	O	Perion signal output of subcode block
58	EFLG	O	Correction monitor output of C1, C2, single and double
59	PW	O	Subcode P, Q, R, S, T, U and W output
60	SFSY	O	Period signal output of subcode frame Rise down when the subcode is stndbyed.
61	SBCK	I	Subcode reading clock input (schmitt input)
62	FSX	O	7.35kHz sync. signal output which is divided the frequency from the crystal resonator.
63	WRQ	O	Standby output of subcode Q output
64	RWC	I	Read / Write control input
65	SQOUT	O	Subcode Q output
66	COIN	I	Command input from the microcomputer
67	CQCK	I	Command input take in clock or subcode take out clock input from SQOUT (schmitt input)
68	RES	I	Chip reset input Once turn to "L" at the power ON
69	TST11	O	Test input pin Open (Normally, output "L")
70	LASER	O	Laser ON/OFF output Control with the serial data command from the microcomputer
71	16M	O	16.9344MHz output However, output 33.8688MHz in the fourfold speed playback mode.
72	4.2M	O	4.2336MHz output
73	CONT	O	Auxiliary output Control with the serial data command from the microcomputer.
74	TEST5	I	Test input pin with pull-down resistor
75	CS	I	Chip select input with pull-down resistor
76	XVSS		Ground for the crystal resonator Normally, 0V.
77	XIN	I	Connect the 16.9344MHz crystal resonator.
78	XOUT	O	Connect the 33.8688MHz crystal resonator in the fourfold speed playback system.
79	XVDD		Power supply for the crystal resonator Normally, 5V.
80	TEST1	I	Test input pin with pull-down resistor

■PD3340A (FLKB ASSY : IC101)

· MODE CONTROL IC

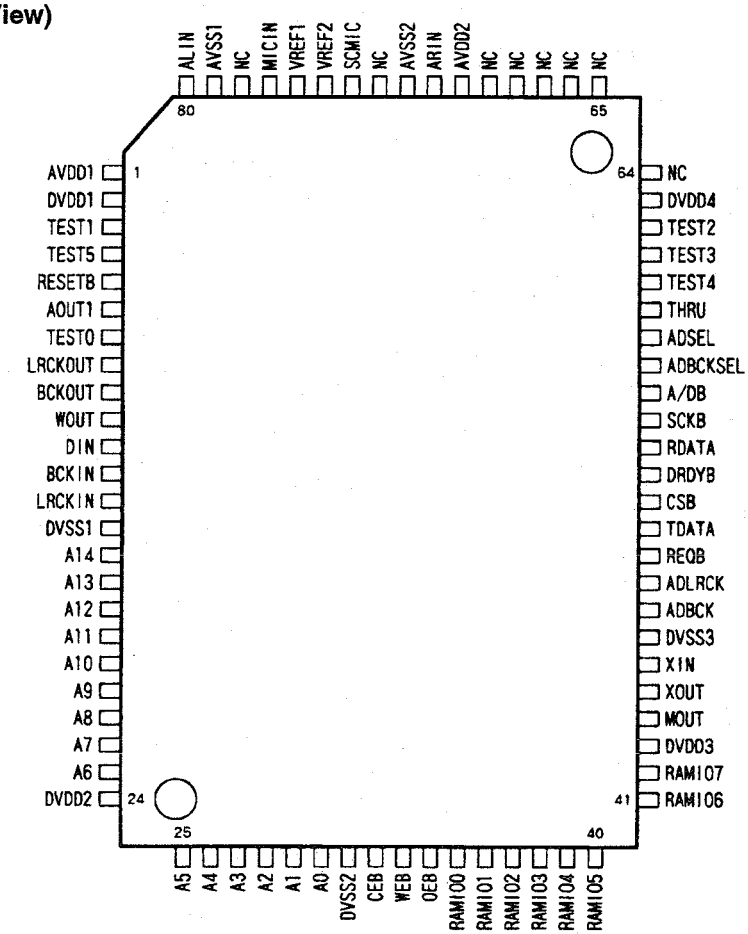
•Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	MODESEL	I	MIC control input (AD input)	41	c	O	Display segment output
2	ECHO VOL	I	Echo volume data value (AD input)	42	b		
3	ONTA BAL	I	Vocal volume data value (AD input)	43	a		
4	MODE SW	I	Mode switch (Normal, Karaoke, External) (AD input)	44	G1	O	Display grid output
5	AVss	I	GND	45	G2		
6	—	I	Not used (GND)	46	G3		
7	N.C.	O	Not used (N.C)	47	G4		
8	—	I	Not used (GND)	48	G5		
9	Vss	I	GND	49	G6		
10	OSC1	I	Oscillator (8MHz)	50	G7		
11	OSC2	O		51	G8		
12	XRESET IN	I	CPU reset (L : reset)	52	Double sided /XSingle sided	I	Connect to power supply (+5V)
13	SHAKE	I/O	Mech. control communication requirement input (mode control communication permission output)	53	N.C.	O	Not used (N.C)
14	SEL IR	I	Remote control input	54	N.C.		
15	V-CD	O	Not used	55	N.C.		
16	POWER	O	Mother board power supply switching output	56	N.C.		
17	EFLG	I	For measuring error rate	57	VCC	I	Power supply (+5V)
18	FSX	I	For measuring error rate	58	I/O DATA3	O	I/O expander data output
19	MICSENSE	I	MIC input	59	I/O DATA2	O	I/O expander data output
20	XSSVC	O	Not used	60	I/O CLK2	O	I/O expander clock output
21	XMICON	O	Mic line switch (L : ON, H : OFF)	61	N.C.	O	Not used (N.C)
22	MIC1/X2	O	MIC input switch (L : MIC1, H : MIC2)	62	N.C.		
23	XINT/EXT	O	Analog audio switch (L : player , H : External input)	63	MUTE	O	Not used
24	BATTLE	O	Scoring MIC switch (L : at normal, H : at competition)	64	CDGM	O	Not used
25	THRU (DASP7)	I	H : through the digital audio L : DSP input of the digital audio	65	XCS(G)	O	Not used
26	I/O CLK1	O	I/O expander clock output	66	XCS (COLOR)	O	Not used
27	I/O DATA1	O	I/O expander data output	67	XSCK	I/O	Serial communication clock
28	N.C.	O	Not used (N.C)	68	S-MTOF	I	Serial communication data input
29	DOG FOOD	O	Pulse output for WATCH DOG	69	S-FTOM	O	Serial communication data output
30	m	O	Display segment output	70	XRESET	O	Mother board reset output
31	i			71	XCS (OSD)	O	Communication requirement output of character generator
32	k			72	DRDY (DASP7)	I	DSP (PM0007A) L : data reception OK
33	j			73	XREQ (DASP7)	I	DSP (PM0007A) L : data transmission OK
34	i			74	A/D (DASP7)	O	Transmission data switch of DSP (PM0007A) (H : address, L : data)
35	h			75	CS (DASP7)	O	DSP (PM0007A) communication requirement output
36	g			76	AVcc	I	Power supply (+5V)
37	f			77	KIN0	I	Key data input (AD input)
38	e			78	KIN1		
39	d			79	KIN2		
40	VDISP	I	FL power supply (-27V)	80	Model select	I	Connect to model select switch

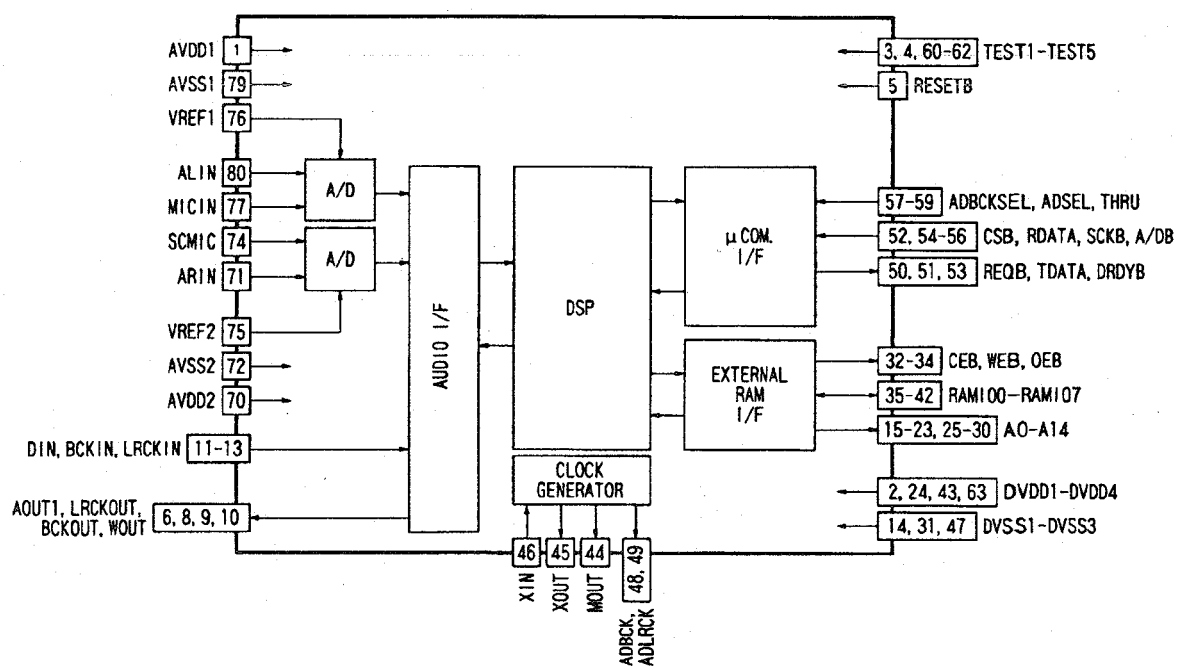
■PM0007A (KRAB ASSY : IC101)

· DASP IC

•Pin Arrangement (Top View)



•Block Diagram



•Pin Function

No.	Name	I/O	Function	No.	Name	I/O	Function
1	AVDD1	—	Power supply pin for A/D converter 1	41	RAMIO6	IOD	Data input/output pins for external Pseudo-SRAM
2	DVDD1	—	Power supply pin 1 for logical block	42	RAMIO7		
3	TEST1	IC	Selection input pin for test mode Normally fixed at "H".	43	DVDD3	—	Power supply pin 3 for logical block
4	TEST5			44	MOUT	OC	Master clock output pin
5	RESETB	IS	Reset input pin. Reset when "L"	45	XOUT	OCX	Crystal oscillator connection pin
6	AOUT	OC	Audio serial data output pin 1	46	XIN	ICX	
7	TEST0	OC	Test data output pin	47	DVSS3	—	Ground pin 3 for logical block
8	LRCKOUT	OC	LR clock output pin "H" : Lch, "L" : Rch	48	ADBCK	IC	Bit clock output pin for external A/D converter
9	BCKOUT	OC	Bit clock output pin Outputs 32fs	49	ADLRCK	IC	LR clock output pin for external A/D converter
10	WOUT	OC	Word clock output pin	50	REQB	OT	Data transfer request output pin for microcomputer.
11	DIN	IC	Digital audio input pin	51	TDATA	OT	Data output pin for microcomputer
12	BCKIN	IC	Bit clock input pin	52	CSB	IC	Chip select input pin for microcomputer interface
13	LRCKIN	IC	LR clock input pin	53	DRDYB	OT	Signal receive condition output pin for microcomputer.
14	DVSS1	—	Ground pin 1 for logical block	54	RDATA	IC	Serial data input pin from microcomputer
15	A14	OC	Address output pins for external Pseudo - SRAM	55	SCKB	IC	Serial clock input pin for receiving data from microcomputer
16	A13			56	A/DB	IC	Address/data judgement pin for data from microcomputer
17	A12			57	ADBCKSEL	IC	Output selection input pin for ADBCK pin 32fs/64fs
18	A11			58	ADSEL	IC	Digital/Analog audio selection input pin
19	A10			59	THRU	IC	Setting pin for through mode. Normally fixed at "L"
20	A9			60	TEST4	IC	Selection input pins for test mode.Normally fixed at "H"
21	A8			61	TEST3		
22	A7			62	TEST2		
23	A6			63	DVDD4	—	Power supply pin 4 logical block
24	DVDD2	—	Power supply pin 2 for logical block.	64	NC		Not connected
25	A5	OC	Address output pins for external Pseudo - SRAM.	65	NC		
26	A4			66	NC		
27	A3			67	NC		
28	A2			68	NC		
29	A1			69	NC		
30	A0			70	AVDD2	—	Power supply pin for A/D converter 2
31	DVSS2	—	Ground pin 2 for logical block	71	ARIN	IA	Rch input pin of analog audio
32	CEB	OC	Chip enable pin for external Pseudo-SRAM	72	AVSS2	—	Ground pin for A/D converter 2
33	WEB	OC	Write enable pin for external Pseudo-SRAM	73	NC	—	Not connected
34	OEB	OC	Output enable pin for external Pseudo-SRAM	74	SCMIC	IA	Score microphone input pin
35	RAMIO0	IOD	Data input/output pins for external Pseudo-SRAM	75	VREF2	IAR	Reference voltage input pin for A/D converter 2
36	RAMIO1			76	VREF1	IAR	Reference voltage input pin for A/D converter 1
37	RAMIO2			77	MICIN	IA	Microphone input pin
38	RAMIO3			78	NC	—	Not connected
39	RAMIO4			79	AVSS1	—	Ground pin for A/D converter 1
40	RAMIO5			80	ALIN	IA	Lh input pin of analog audio

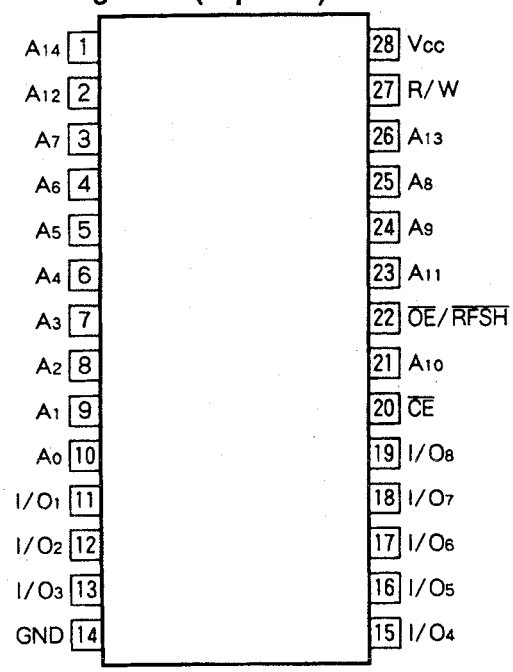
Note

IC : CMOS input
IOD : TTL input, CMOS output, Built-in pull-down resistor
IAR : Analog input, Reference voltage input
OCX : Oscillator, CMOS output
IS : Schmidt input
IO : TTL input, CMOS output
IA : Analog input
ICX : Oscillator, CMOS input
OT : Tri-state output
OC : CMOS output

■LH5P832N-12 (KRAB ASSY : IC102)

- 256k PSEUDO-SRAM

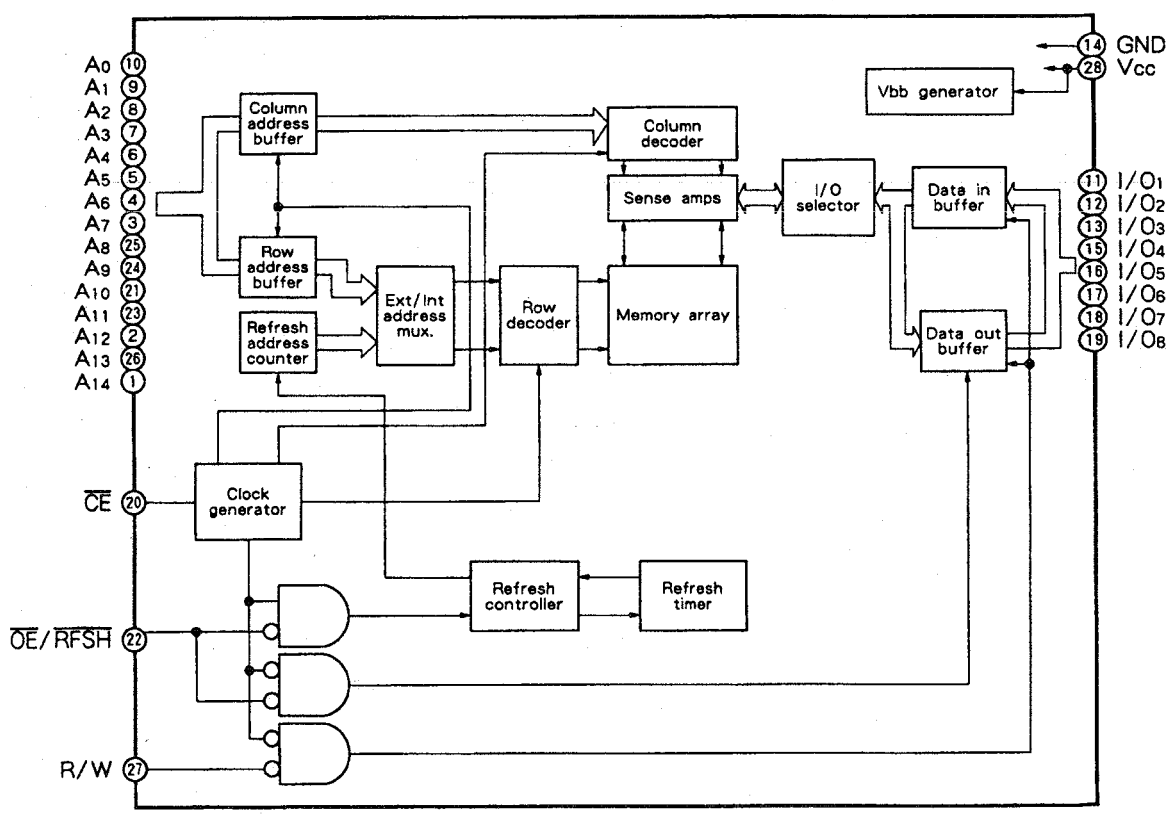
•Pin Arrangement (Top View)



•Pin Function

No.	Pin Name	Function
1~10, 21, 23~26	A_0~A_{14}	Address input
27	R/W	Read/write input
22	$\overline{OE}/\overline{RFSH}$	Output enable?refresh
20	$\overline{CE}$	Chip enable
11~13, 15~19	I/O_1~I/O_8	Data input/output
14	GND	Ground
28	Vcc	Power supply

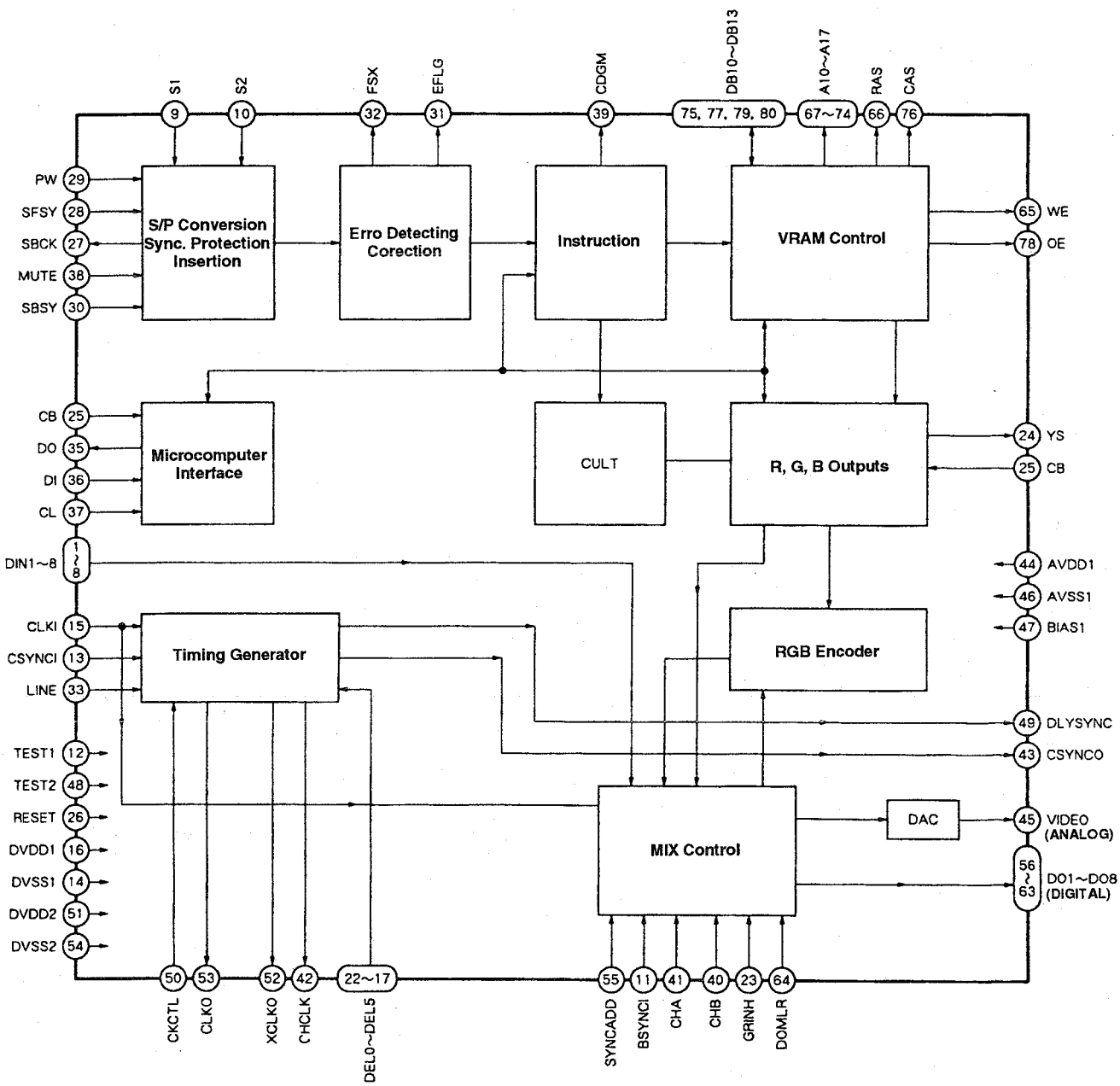
•Block Diagram



■PDC016A (GRPB ASSY : IC103)

· DIGITAL GRAPHIC DECODER FOR LD

•Block Diagram



•Pin Function

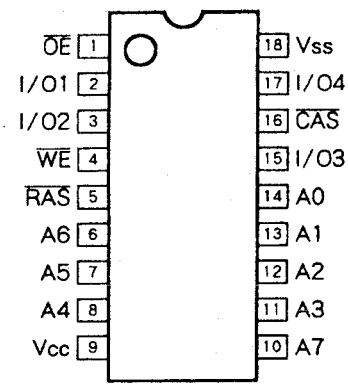
No.	Mark	Pin Name	I/O	Function
1	DIN8	Video data input	I	Digital video data input (MSB)
2	DIN7			Digital video data input
3	DIN6			
4	DIN5			
5	DIN4			
6	DIN3			
7	DIN2			
8	DIN1			Digital video data input (LSB)
9	S1	DSP selection	I	S1 / S2 / Select the DSP: 0 0 LC7861N/67; 0 1 —; 1 0 LC7860K/63; 1 1 LC7868/69/681/681KE
10	S2			
11	$\overline{\text{BSYNCI}}$	Ref. SYNC input	I	Reference SYNC signal input for burst phase judgment
12	TEST1	Test input	I	Input for test Normally, fixed to "L".
13	$\overline{\text{CSYNCI}}$	Composite sync. signal input	I	Composite sync. signal input
14	DVSS1	Ground	—	GND for digital section
15	CLKI	Clock input	I	4fsc clock input (self-bias input)
16	DVDD1	Power supply (+5V)	—	Power supply for digital section
17	DEL5	Delay quantity setting input	I	DELAY quantity setting of the composite sync. signal (MSB)
18	DEL4			DELAY quantity setting of the composite sync. signal
19	DEL3			
20	DEL2			
21	DEL1			
22	DEL0			DELAY quantity setting of the composite sync. signal (LSB)
23	GRINH	Graphics INH	I	Graphics display inhibit control input
24	YS	Super inpose output	O	Super inpose control output
25	CB	Color-bar selection	I	L : Normal mode, H : Color-bar output
26	$\overline{\text{RESET}}$	Reset input	I	Reset signal input
27	SBCK	Clock output	O	Clock output of subcode R to W read out
28	SFSY	Sync. signal input	I	Subcode block sync. signal input
29	PW	Data input	I	Subcode R to W data input
30	SBSY	Sync. signal input	I	Subcode block sync. signal input
31	EFLG	Error state monitor output	O	Error state monitor signal output
32	FSX	Error state monitor trigger	O	Error state monitor trigger signal output
33	LINE	Line number selection	I	Line number selection input H : 263H, L : 262H (at non-inter laced)
34	CE	Enable input	I	Control input of serial input/output data
35	DO	Data output	O	Serial data output
36	DI	Data input	I	Serial data input
37	CL	Clock input	I	Clock input for serial data input/output
38	MUTE	Mute pin	I	Control signal input which is invalidated the subcode data
39	CDGM	Graphics data discrimination output	O	When graphics instruction is input, it becomes H. (Reset "L" is possible by command control.)
40	CHB	OSD data input	I	OSD edge data input

No.	Mark	Pin Name	I/O	Function
41	CHA	OSD data input	I	OSD character data input
42	CHCLK	Clock output	O	2fsc clock output (It is locked to the burst signal.)
43	$\overline{\text{CSYNCO}}$	Composite sync. output	O	Composite sync. signal output
44	AVDD1	Power supply (+5V)	—	Power supply for analog section
45	VIDEO	Composite video signal input	O	Composite video signal output (8 bits DAC output)
46	AVSS1	Ground	—	GND for analog section
47	BIAS1	Capacitor connection pin	O	Connect a capacitor for eliminating the ripple.
48	TEST2	Test input	I	Input for test Normally, error correction logical selection (H : PQPQ, L : QPQ)
49	$\overline{\text{DLYSYNC}}$	Delayed composite sync. output	O	Delayed composite sync. signal output
50	CKCTL	Clock polarity selection	I	BSYNCI latch selection H : FSC4, L : FSC4 (It becomes test input pin at test)
51	DVDD2	Power supply (+5V)	—	Power supply for digital section
52	XCLKO	Inverting clock output	O	4fsc inverting clock output
53	CLKO	Clock output	O	4fsc clock output
54	DVSS2	Ground	—	GND for digital section
55	SYNCADD	CSYNC selection input	I	Additive selection input of composite sync. signal to the 8 bit input data. H : Adding, L : No adding
56	DO1	Video data output	O	Digital composite video signal output (LSB)
57	DO2			Digital composite video signal output
58	DO3			
59	DO4			
60	DO5			
61	DO6			
62	DO7			
63	DO8			Digital composite video signal output (MSB)
64	DOMLR	Data inverting selection input	I	Inverting selection input of the video digital signal output H : Inversion (LSB→MSB), L : Not inversion
65	$\overline{\text{WE}}$	DRAM output	O	DRAM writing enable signal output
66	$\overline{\text{RAS}}$		O	DRAM row address strove signal output
67	A10		O	DRAM address (A0) output
68	A11			DRAM address (A1) output
69	A12			DRAM address (A2) output
70	A13			DRAM address (A3) output
71	A14			DRAM address (A4) output
72	A15			DRAM address (A5) output
73	A16			DRAM address (A6) output
74	A17			DRAM address (A7) output
75	DB10		I/O	DRAM address (D0) output
76	$\overline{\text{CAS}}$		O	DRAM column address strove signal output
77	DB11		I/O	DRAM data (D1) input/output
78	$\overline{\text{OE}}$		O	DRAM reading enable signal output
79	DB12		I/O	DRAM data (D2) input/output
80	DB13		I/O	DRAM data (D3) input/output

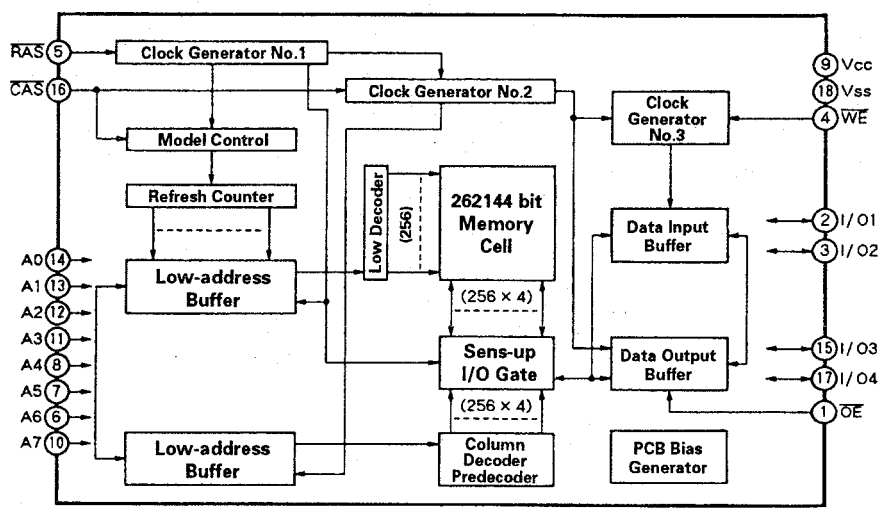
■LC32464P-80 (GRPB ASSY : IC104)

- 65536 WARDS × 4 bit CMOS DYNAMIC RAM

•Pin Arrangement



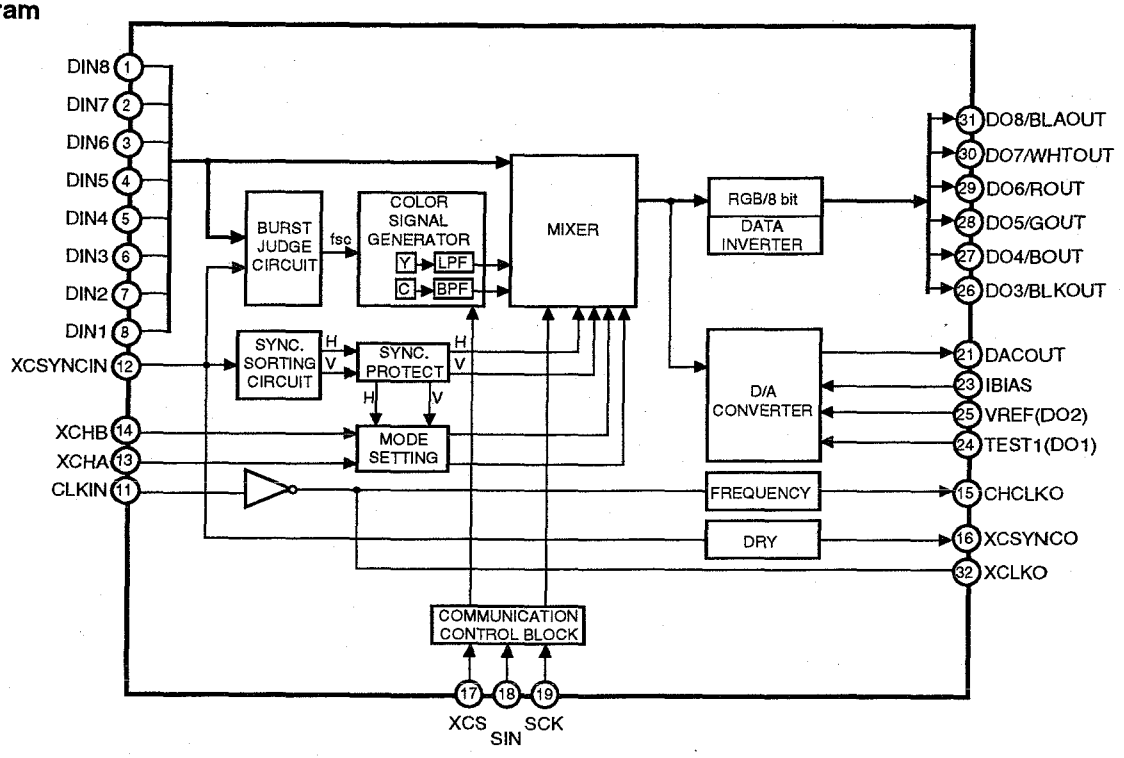
•Block Diagram



■PD0239A (GRPB ASSY : IC201)

· COLOR ADDITION PROCESSOR

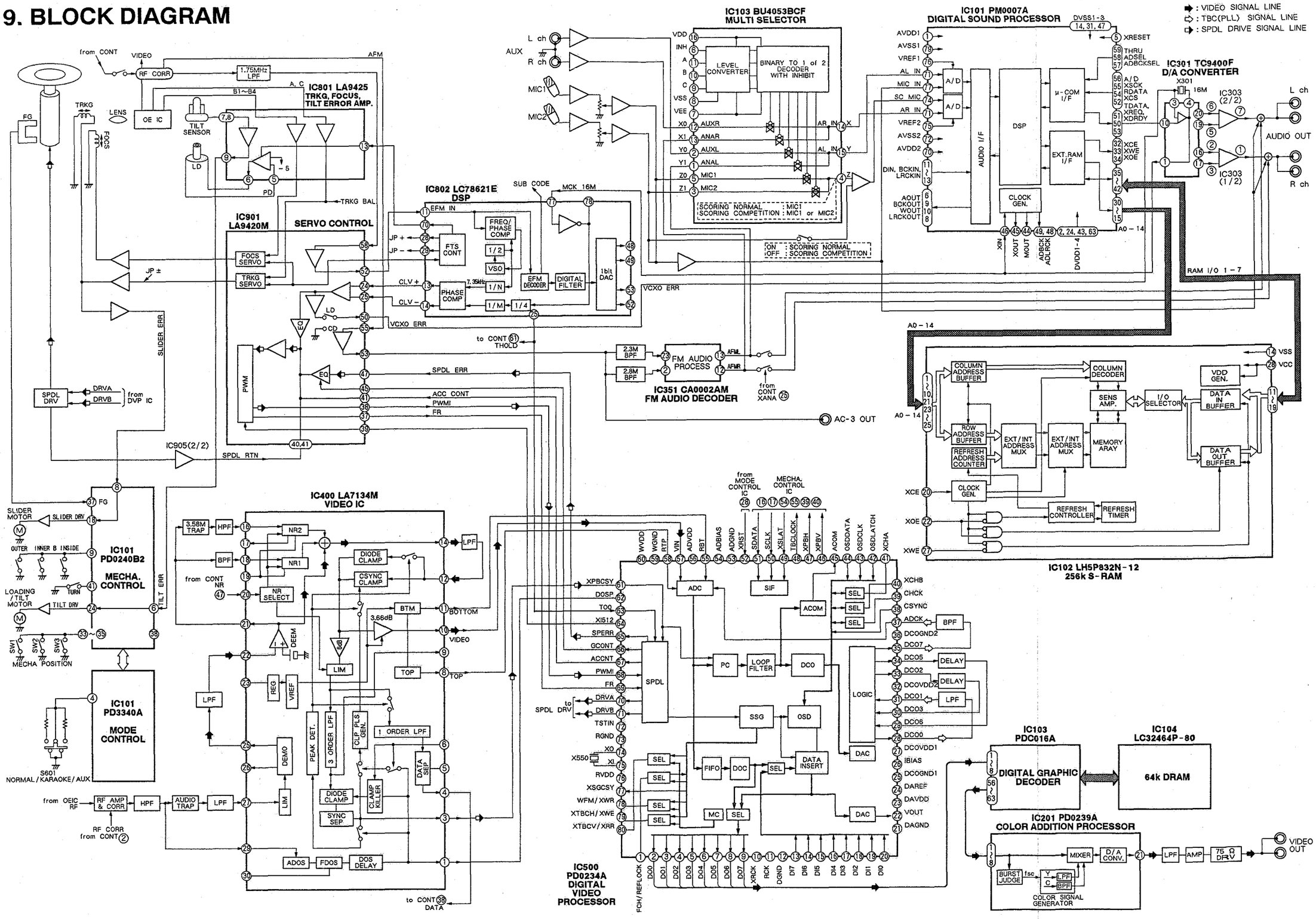
•Block Diagram



•Pin Function

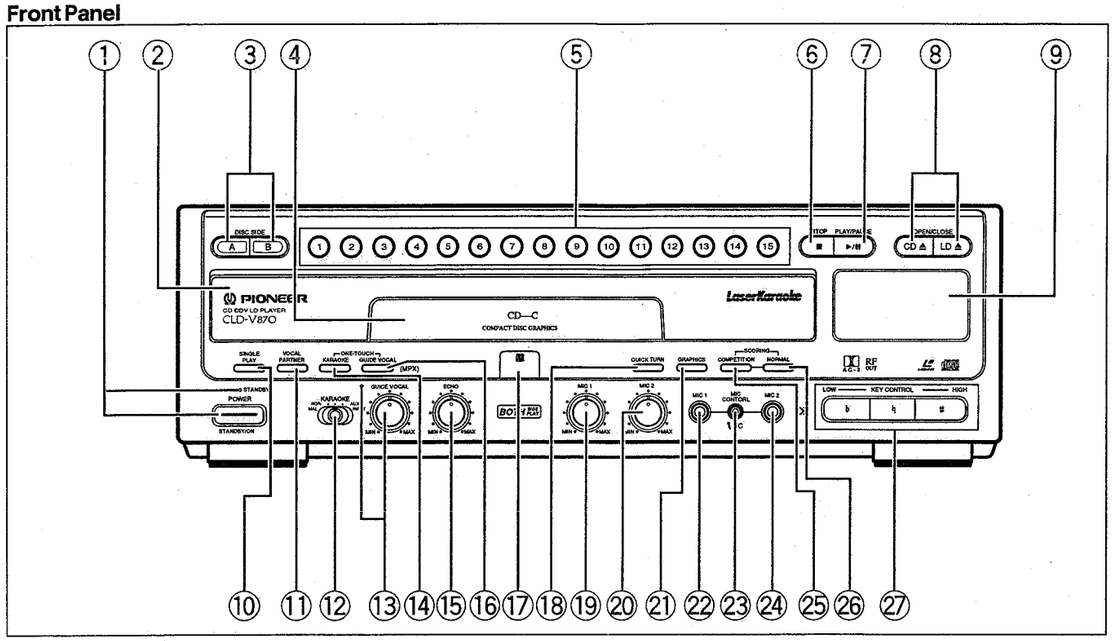
No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	DIN8	I	(MSB)	17	XCS	I	Chip select input Serial data conytol input
2	DIN7	I		18	SIN	I	Serial data input
3	DIN6	I		19	SCK	I	Clock input for serial data input
4	DIN5	I		20	AVDD	—	Analog section power supply for DAC (+5V)
5	DIN4	I	Composite video data input	21	DACOUT	O	Composite video signal output (DAC output)
6	DIN3	I		22	AVss	—	Analog section GND for DAC
7	DIN2	I		23	IBIAS	I	Connect a resistor for DAC reference current setting
8	DIN1	I	(LSB)	24	TEST1/DO1	I/O	Connect a capacitor for DAC reference current setting/composite video data output (LSB)
9	DVss	—	GND for digital section	25	TEST2/DO2	I/O	Reference voltage input for DAC/composite video data output
10	DVDD	—	+5V power supply for digital section	26	BLKO/DO3	O	OSD timing (blanking) signal output/composite video data output
11	CLKIN	I	Master clock input LD : 14.31818MHz, VIDEO CD : 13.5MHz	27	BOUT/DO4	O	OSD B signal output/composite video data output
12	XCSYNCIN	I	Composite sync.signal input	28	GOUT/DO5	O	OSD G signal output/composite video data output
13	XCHA	I	OSD character data input	29	ROUT/DO6	O	OSD R signal output/composite video data output
14	XCHB	I	OSD framing data input	30	WHTOUT/DO7	O	OSD white signal output/composite video data output
15	CHCLKO	O	DOT clock output System clock output for OSD (Outputs a clock (CLKIN) divided by 2)	31	BLAOUT/DO8	O	OSD black signal output/composite video data output
16	XCSYNCO	O	Composite sync. signal output for OSD.	32	XCLKO	O	Inversion master clock (CLKIN) output

9. BLOCK DIAGRAM



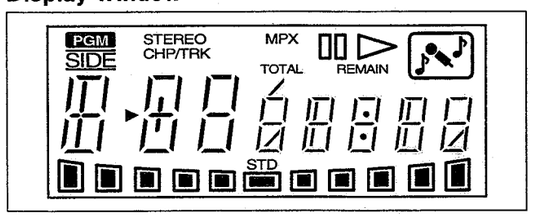
10. PANEL FACILITIES

Front Panel



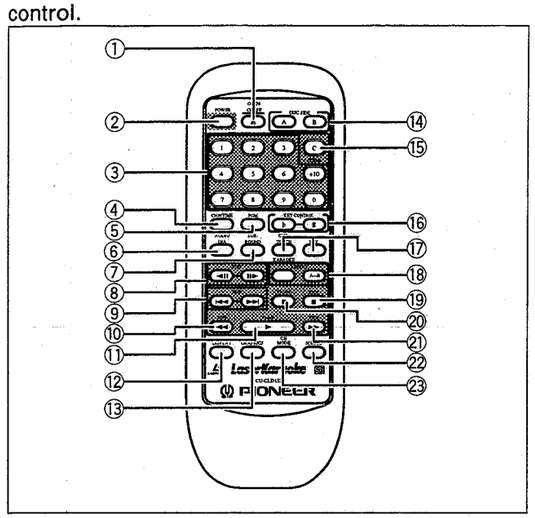
① **POWER STANDBY/ON switch and STANDBY indicator**
Press to turn the power on and off.
② **Disc table**
③ **DISC SIDE A/SIDE B buttons**
④ **CD Disc table**
⑤ **Direct music search buttons**
⑥ **STOP (■) button**
⑦ **PLAY/PAUSE (►/II) button**
⑧ **OPEN/CLOSE (CD ≜/LD ≜) buttons**
⑨ **Display window**
⑩ **SINGLE PLAY button/indicator**
⑪ **VOCAL PARTNER button/indicator**
⑫ **NORMAL/KARAOKE/AUX INPUT selector**
⑬ **GUIDE VOCAL level control/indicator**
⑭ **ONE-TOUCH KARAOKE button/indicator**
⑮ **ECHO level control**
⑯ **ONE-TOUCH GUIDE VOCAL (MPX) button/indicator**
⑰ **Remote sensor**
⑱ **QUICK TURN ON/OFF button/indicator**
⑲ **MIC 1 level control**
⑳ **MIC 2 level control**
㉑ **GRAPHICS button/indicator**
㉒ **MIC 1 jack**
㉓ **MIC CONTROL jack**
㉔ **MIC 2 jack**
㉕ **SCORING COMPETITION button**
㉖ **SCORING NORMAL button**
㉗ **KEY CONTROL buttons**

Display Window



① **SIDE indicator**
② **PGM (Program) indicator**
③ **Chapter number/Track number indicator**
④ **Audio mode indicators**
Display the type of the played audio signal when the KARAOKE or AUX input is selected.
⑤ **TOTAL indicator**
⑥ **8 Pause indicator**
⑦ **3 Play indicator**
⑧ **REMAIN indicator**
⑨ **KARAOKE indicator**
⑩ **Key control indicator**

Remote control unit :
Remote control buttons with the same names or marks as buttons on the front panel of the player control.



① **OPEN/CLOSE (≜) button**
② **POWER button**
③ **Digit buttons**
④ **CHP/TIME (Chapter/Time) button**
⑤ **PGM (Program) button**
⑥ **AUDIO D/A button**
⑦ **SURROUND button**
⑧ **STEP (◄II II►) buttons**
⑨ **SKIP (◄◄ ►►) buttons**
⑩ **REV (◄◄ scan) buttons**
⑪ **PLAY button**
⑫ **DISP(Display) button**
⑬ **GRAPHICS button**
⑭ **DISC SIDE A/B buttons**
⑮ **CLEAR button**
⑯ **KEY CONTROL buttons**
⑰ **ONE-TOUCH KARAOKE button**
MPX button
⑱ **REPEAT A-B button**
REPEAT button
⑲ **(■) STOP button**
⑳ **(II) PAUSE button**
㉑ **FWD (►► scan) button**
㉒ **SCROLL buttons**
㉓ **CH MODE button**

11. SPECIFICATIONS

General
System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements ..... 120 V AC, 60 Hz
Power consumption ..... 41 W
Weight ..... 6.7 kg (14 lb 12 oz)
Dimensions ..... 420 (W) x 412 (D) x 132 (H) mm
16 -9/16 (W) x 16 -3/16 (D) x 5 -1/4 (H) in
Operating temperature ..... +5 °C ~ +35 °C (41 ºF ~ 95 ºF)
Operating humidity ..... 5 % ~ 85 %
(There should be no condensation of moisture.)

Video characteristics (two pairs)
Format ..... NTSC specifications
Video output
Level ..... 1 Vp-p nominal, sync. negative, terminated
Impedance ..... 75 W unbalanced
Jack ..... RCA jack

Audio characteristics (two pairs)
Output level
During analog audio output ..... 200 mVrms (1 kHz, 40 %)
During digital audio output ..... 200 mVrms (1 kHz, –20 dB)
Jacks ..... Both RCA jacks
Number of channels ..... 2 (Stereo)

Other terminals
Control input/output ..... Both miniature jacks
AUX ..... RCA jacks
VHF adapter output (Video/Audio) ..... Both RCA jacks with DC jack
AC-3•RF OUT PUT ..... RCA jack

Accessories
Remote control unit 1
Size "AA" (IEC R6P) dry cell batteries 2
Video cord 1
Audio cord 1
Power cord 1
Operating instructions 1
Warranty card 1

NOTE:
The specifications and design of this product are subject to change without notice, due to improvement.